

GUIDELINES TO ESTABLISH THE
COLORADO ROCKIES REGIONAL COOPERATIVE 1993

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TO
ESTABLISH
THE
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1993**

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*final Report for 28-C3-701
Oct 1993*

This report on guidelines to establish a regional cooperative and identify appropriate "deliverables" to address biodiversity, resource management, and human/wildland interface issues of mutual concern was made possible by:

* ***The Colorado Rockies Regional Cooperative (CORRC) Steering Committee.*** The steering committee includes the following individuals.

- * Jim Crain, Director, City of Boulder Real Estate & Open Space
- * Alan Carpenter, Colorado Land Steward, The Nature Conservancy
- * Rich Larson, Program Manager, Watchable Wildlife for the Central Region, Colorado Division of Wildlife
- * Carl Bock, Professor of Biology, University of Colorado
- * Dave Stevens and Larry Gamble, Land Use Specialists, Rocky Mountain N.P.
- * Roger Tarum, Staff Officer for Planning and Information Systems, Arapaho-Roosevelt N.F.
- * Bob Alexander, Research Geographer, U.S. Geological Survey
- * John Barnett, Planning Director, Larimer County
- * Rick Schroeder, Research Biologist, U.S. Fish & Wildlife Service
- * Howard Alden, Professor Emeritus, Colorado State University (Chairperson and Feasibility Study Project Leader)

These individuals have made significant contributions in developing the CORRC vision statement, the CORRC memorandum of understanding, the substance of the CORRC study leading to this report, proposed administrative guidelines, and a CORRC program of deliverables. Communication and coordination within the group has been excellent, constructive and professional.

* ***Other Interested Parties.*** Several individuals representing other potential cooperators in CORRC have participated in work sessions, committee working groups, and business meetings. They have helped immeasurably in assisting the Steering Committee in maintaining its focus, bringing relevant ideas and suggestions to the table to further the implementation of a cooperative, and providing key inputs to enhance this study.

- * Don Brown, Boulder County Parks and Open Space
- * Todd Mowrer, Mensurationist, Rocky Mountain Forest & Range Experiment Station
- * Bill Wilcox, Assistant State Forester, Colorado State Forest Service
- * Denis Dean, Faculty Member, G.I.S., Colorado State University
- * Austin Condon, Staff Officer for Lands, Minerals & Water, Arapaho-Roosevelt N.F.
- * Tom Stohlgren, Global Change Research Coordinator, Rocky Mountain Regional Office, National Park Service
- * Frances Pusateri, Colorado Division of Wildlife


* ***Study Staff.*** Several students contributed a significant amount of time and effort beyond contract agreements to bring this study to closure. They are:

- * Dave Augeri, Research Associate, Colorado State University
- * Susan Barro, Consultant for Statistical Analysis, Colorado State University
- * Susan Pierce, Manuscript Typing and Editing, Colorado State University

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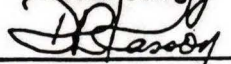
* **Agency Participants, per the CORRC Memorandum of Understanding.** Without the initial MOU as a basis for CORRC to proceed, CORRC would not have been able to define and develop this report. Appreciation is expressed to those who share the vision that meaningful data sharing and cooperative research may be the most efficient and cost effective way to deal with complex biodiversity, resource management, and human/wildland interface issues. Participants to the MOU are:

Colorado State University
Forestry and Natural Resources


Dean College

7/1/92
Date

University of Colorado


University of Colorado

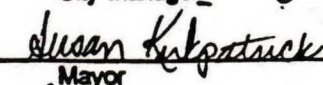
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City of Boulder


City Manager

4/17/92
Date

City of Fort Collins


Mayor

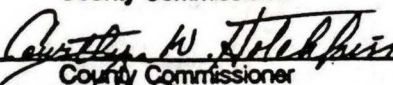
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Boulder County


County Commissioner

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Larimer County


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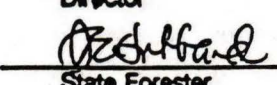
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State of Colorado
Division of Wildlife


Director

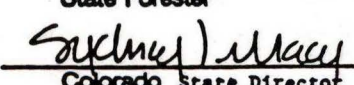
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Colorado State Forest Service


State Forester

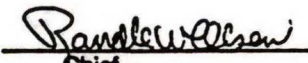
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TABLE OF CONTENTS

Acknowledgements	i
Memorandum of Understanding members	ii
List of Figures	iv
List of Tables	v
 Section 1: Colorado Rockies Regional Cooperative	 1
General Overview	1
CORRC Goals & Objectives	2
 Section 2: CORRC Biogeographical Region	 4
Area of Concern	4
Landscape Zones	4
Ecoregion Descriptions	4
County Descriptions	12
 Section 3: Priority Issues	 15
Background	15
Priority Issues	17
 Section 4: CORRC Program Recommendations	 22
CORRC Role Definitions	22
Program Elements	22
Data Sharing Cooperative- Ongoing	25
Joint Projects to Address Priority Issues within the CORRC	
Area of Concern.	29
Education and Outreach Recommendations	32
Recommendations to Affiliate with other Established	
or Emerging Programs	33
 Section 5: CORRC as a Regional Cooperative	 38
Organizational Structure and Administrative Procedures	
Recommendations	38
Budget Recommendations	46
Membership Classes	46
In Kind Contributions	47
 References	 48
 Appendices:	 49
A. Colorado Rockies Biosphere Cooperative Vision Statement	50
B. CORRC Memorandum of Understanding	56
C. CORRC Feasibility Study Plan	60
D. Survey Response Catalog of Issues	73
E. Data Sharing Cooperative Memorandum of Understanding	78
F. Proposed CORRC Bylaws	83

LIST OF FIGURES

<i>Figure 1: The Colorado Rockies Regional Cooperative, (CORRC) Area of Concern, 1992..</i>	5
<i>Figure 2: Landscape Zones within the CORRC Area of Concern, 1992.</i>	6
<i>Figure 3: The Combination of Ecoregion Provinces and Natural Vegetation Types within the CORRC Area of Concern, 1992.</i>	7
<i>Figure 4: The Combination of Landscape Zones and Natural Vegetation Types within the CORRC Area of Concern, 1992..</i>	16
<i>Figure 5: Survey Response Regarding Education and Research as CORRC's Primary Role, 1992.</i>	23
<i>Figure 6: Percent of Responses Favoring Specific CORRC Coop Efforts, 1992.</i>	23
<i>Figure 7: Survey Response to Interest in being a Partner, Cooperating in CORRC, 1992.</i>	24
<i>Figure 8: Vegetation Types - 3D Image.</i>	26
<i>Figure 9: Vegetation Types- Lion Gulch Implementation Area.</i>	27
<i>Figure 10: USGS Quad Legend for US Forest Service GIS Data Base; Arapaho-Roosevelt National Forest, 1992.</i>	28
<i>Figure 11: Survey Response to the Appropriateness of a CORRC Administrative Board, 1992.</i>	39
<i>Figure 12: Survey Response to Expanding the CORRC Administrative Board, 1992.</i>	39
<i>Figure 13: Survey Response to the Desirability of CORRC Administrative Guidelines, 1992.</i>	40
<i>Figure 14: Proposed CORRC Organizational Structure, 1992.</i>	41

LIST OF TABLES

<i>Table 1: The Evolution of Issues Identified by Issue Categories, 1991-92.</i>	<i>17</i>
<i>Table 2: Highest Priority Resource Issues within the CORRC study area <u>Core Zone</u> as Identified by Survey Response Groups, 1992.</i>	<i>18</i>
<i>Table 3: Highest Priority Resource Issues within the CORRC study area <u>Management</u> <u>Zone</u> as Identified by Survey Response Groups, 1992.</i>	<i>19</i>
<i>Table 4: Highest Priority Resource Issues within the CORRC study area <u>Cooperation</u> <u>Zone</u> as Identified by Survey Response Groups, 1992.</i>	<i>21</i>

Section 1

COLORADO ROCKIES REGIONAL COOPERATIVE

OVERVIEW

A. General

The idea for a regional cooperative was initiated in October, 1989 in Boulder, Colorado. It included participants from the City and County of Boulder, the University of Colorado, Colorado State University, the National Center for Atmospheric Research, US Geological Survey and the Colorado Division of Wildlife. Early discussion centered around the status of nationally designated biosphere reserves in this region and their role in fostering cooperative research. This led to the idea of a regional biosphere cooperative affiliated with the US Man and the Biosphere program (MAB).

In 1990 a vision statement was prepared to clarify and guide the thinking of the participants from the early meetings. After some deliberation the participants approved the vision statement, (Appendix A), established a steering committee and selected a chair to explore how to organize and formalize a regional cooperative. The main points of the vision statement are:

* ***Purpose:*** "promote knowledge and understanding of the natural and human resources of this region, to encourage wise use of these resources through research; data base development and integration; education; and the demonstration of principles for ecosystem management..."

* ***Organization:*** "to create and develop means of cooperation among organizations involved in research, education, and resource management. These organizations include federal, state, county and city agencies; educational institutions; and private organizations. A more formal organization will be established, with a coordinating committee composed of representatives from cooperating organizations."

In conjunction with the vision statement a Colorado Rockies Data Cooperative project was initiated in early 1991 to see if cooperation and sharing of data among organizations would be a worthwhile effort. This demonstration project was designed to share basic resource information on wildfire management, wildlife habitat/migration and other issues affecting biodiversity. The project area included the Lion Gulch, Wild Basin, and Longs Peak areas where Arapaho/Roosevelt NF and Rocky Mountain NP have ongoing planning efforts. The core group of cooperators included Colorado State University, Rocky Mountain NP, Colorado Division of Wildlife, Arapaho/Roosevelt NF, Boulder County Land Use Dept., Larimer County Planning Dept., and the US Geological Survey.

In April, 1991 the Colorado Rockies Regional Cooperative (CORRC) steering committee followed up contacts with the US MAB office to affiliate with the MAB cooperative program. Since the US MAB program has been and continues to be under review, the CORRC steering committee decided to proceed with its own cooperative effort. CORRC's 1991-92 activities have included the following:

1. October 1991 Issues Workshop: Approximately 40 participants from city, county, state, and federal agencies; the private sector; and educational institutions met in Ft. Collins to list current and "near" future issues dealing with biodiversity, resource management, the human/wildland interface. They also discussed the role, organization and administration of CORRC as a facilitator for research, education and information sharing regarding issues listed as high priority. Most workshop participants indicated that having a "non-traditional" forum for information sharing was desirable. They encouraged CORRC to proceed with a feasibility study and initiate partnership among interested parties.

2. Memorandum of Understanding (MOU) 1992: Between February and October, 1992, 13 entities signed an MOU agreeing in principle to cooperate in developing and sharing information related to natural resource use, planning and management issues (Appendix B). Key to the MOU are cooperative projects among partners; expanding extension services to local residents, private landowners and resource managers; sharing information within and outside the region; identifying research needs relative to resource issues, promoting education that fosters an ethic regarding sustainability of natural resources; and recognizing rural development needs and economies. The MOU states that CORRC funding can only be through willing partners for agreed upon projects; the MOU can only be implemented in accordance with existing laws and regulations of partners; and the MOU will not infringe on any party's legal, managerial, research, or educational authorities. The MOU has no legal authority for resource management, planning or the designation of land use.

3. CORRC Feasibility Study, Summer and Fall 1992: Consistent with the initial meetings to explore a regional cooperative, a feasibility study was initiated to determine CORRC's role and ability to accomplish the goals and objectives of a regional cooperative (Appendix C).

B. CORRC Goals and Objectives: Given the overview of CORRC, an approved vision statement and the MOU, the goals of CORRC are to:

1. Promote research needs and application, education and demonstration related to economic development and ecosystem principles, and to extend public service with regard to biodiversity, resource management and the human/wildland interface.

2. Enhance information sharing, coordination, cooperative research and education related to the first goal.

3. Affiliate with the U.S. Man and the Biosphere Program (MAB) as a regional cooperative.

To achieve CORRC goals and meet MAB cooperative guidelines, feasibility study objectives are:

* Description and delineation of the biogeographical region. This would include "fine tuning" regional boundaries and three landscape zones to insure cohesiveness in terms of natural features, ecosystems and human cultural traditions. In addition, it is intended to be readily distinguishable in terms of physiography, ecological communities/life zones, and political boundaries.

* Identification of priority issues of regional concern. Environmental, land use, and socio-economic issues of greatest concern will be determined and documented by/within each of the three zones. Input will be generated from representatives of public agencies and institutions, the private sector and the general public. This will be accomplished via surveys and workshops.

* Determination of interest in formalizing CORRC and future affiliation with MAB. This will be a continuation of the vision statement. Discussion to date has resulted in the formation of a Core/Steering Committee to initiate and review project proposals, set agendas and call meetings regarding CORRC activities, and working with a project leader to address items such as 1. and 2. above. A chairperson has been designated to work with the Steering Committee to carry out its tasks. Further interviews and meetings will be conducted to formalize/establish a framework for cooperation in developing and sharing information consistent with CORRC goals and objectives.

* Identify an administrative mechanism. This will identify the appropriate mechanism for developing the cooperative and appropriate programs.

* Identify a program that addresses items per 2. above. This element will provide a program that addresses priority regional issues per 2. above. Organization, support elements, research and educational activities, and information dissemination activities will also be identified.

Feasibility study findings and recommendations are presented in the following sequence:

- Section 2. CORRC Biogeographical Region.
- Section 3. Priority Issue
- Section 4. CORRC Program Recommendation
- Section 5. CORRC As a Regional Cooperative

Section 2

CORRC BIOGEOGRAPHICAL REGION

A. **Area of Concern:** The partners in the cooperative established a "working area boundary" (see Figure 1) based upon the following factors:

1. The five county area includes a range of issues typical to the Central Rocky Mountains and high plains region;
2. The area is small enough in size to allow potential educational activities, research programs and data sharing projects to be accomplished within resources available to cooperators;
3. The area has excellent examples of the core management and cooperative zones outlined by MAB.
4. The area has four existing biosphere reserves within its boundary (Central Plains, Fraser, Niwot Ridge and Rocky Mountain); and
5. The area includes the two dominant ecoregions of Colorado (Bailey, 1976; Bailey, 1980).

B. **Landscape Zones:** The area of concern provides a "landscape for learning" in the Central Rocky Mountains and high plains regions. In the CORRC area of concern, three landscape zones have been adopted (Figure 2). They are:

***Core zone** - land areas where natural processes are dominant.

***Management zone** - land areas where natural processes and human influences are codominant or interact.

***Cooperation zone** - land areas where human influences are dominant.

Zone boundaries were delineated by members of the original CORRC steering committee. These boundaries are expected to be refined as more and better information becomes available through CORRC.

C. **Ecoregion Description:** The CORRC area of concern includes the Rocky Mountain Forest and the Great Plains-Shortgrass Prairie Provinces within the Steppe Division of the Dry Domain (Figure 3). All descriptions are direct quotes from Bailey's "Description of the Ecoregions of the United States", 1980.

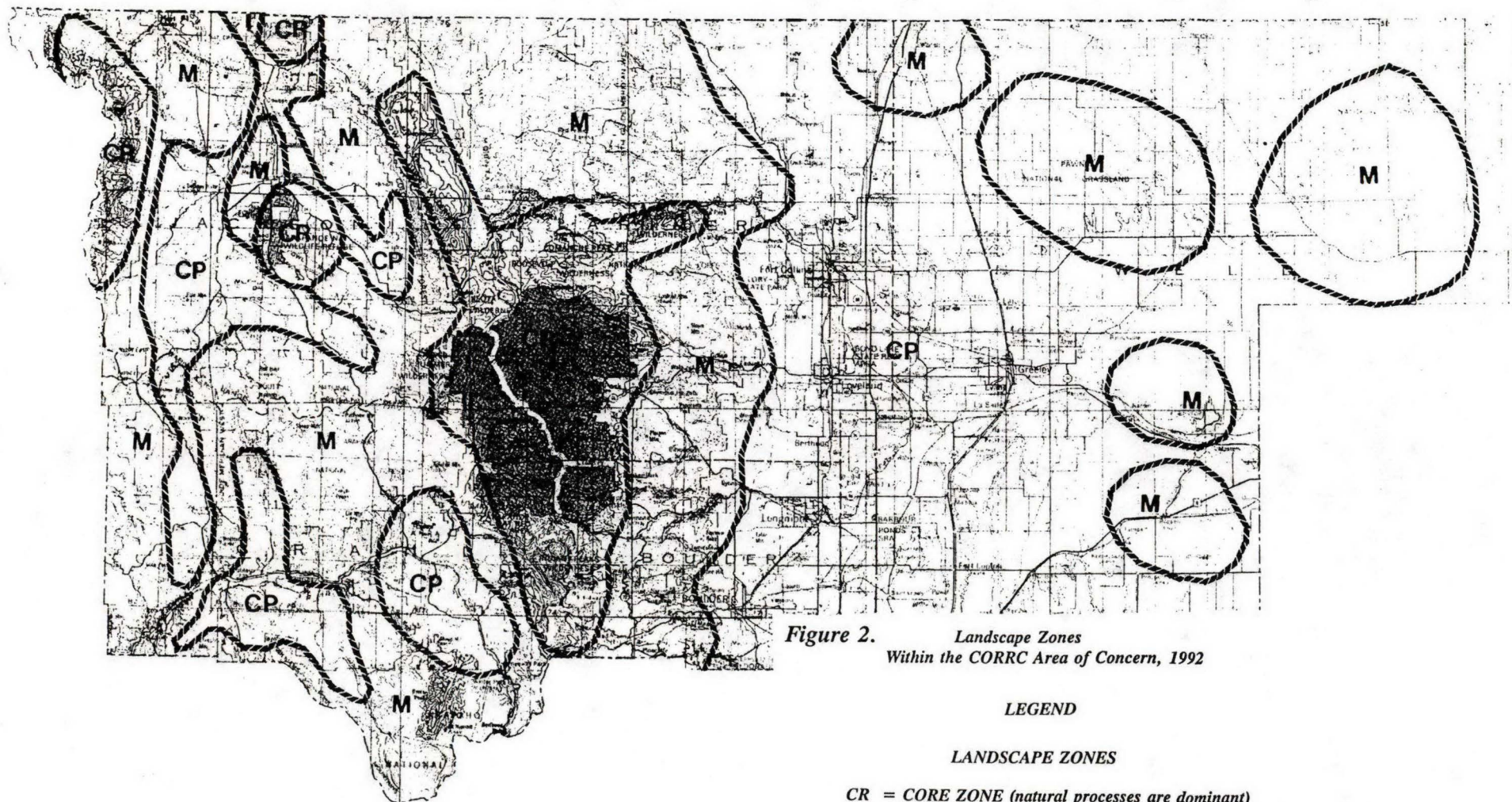


Figure 2. Landscape Zones
Within the CORRC Area of Concern, 1992

LEGEND

LANDSCAPE ZONES

- CR** = CORE ZONE (natural processes are dominant)
- M** = MANAGEMENT ZONE (natural processes and human influences are codominant or interact)
- CP** = COOPERATION ZONE (human influences are dominant)

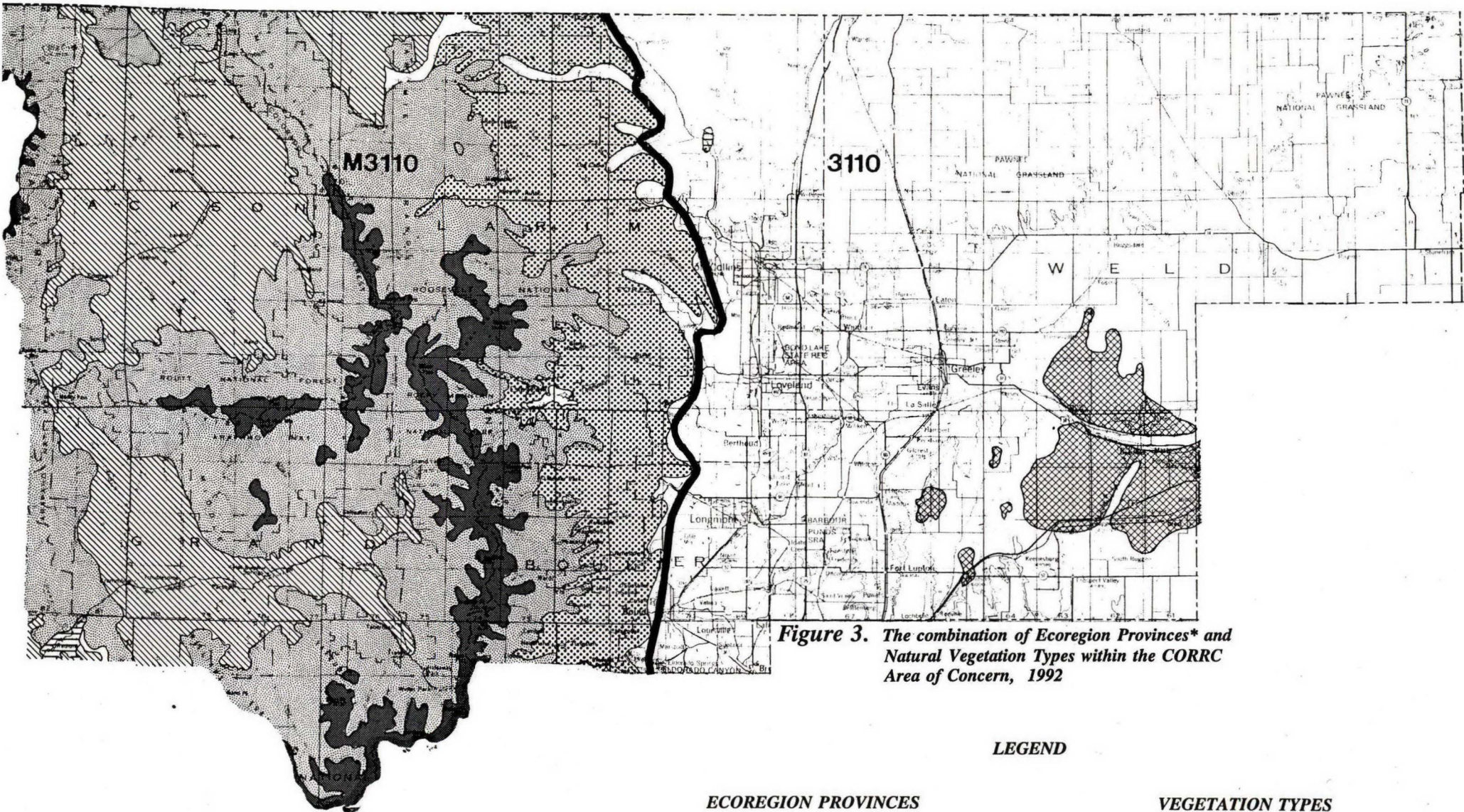


Figure 3. The combination of Ecoregion Provinces* and Natural Vegetation Types within the CORRC Area of Concern, 1992

LEGEND

ECOREGION PROVINCES

M3110 = Rocky Mountain Forest
3110 = Great Plains Short-Grass Prairie

*From: *Ecoregions of The United States*, by R.G. Bailey, 1976.

VEGETATION TYPES

ALPINE	SHRUBLANDS	GRASSLANDS
FORESTS	Pinyon-Juniper	
Subalpine	Oak-Bush	
Montane	Sagebrush	
	Greasewood	
	Shadscale	
	Sandsage	

*From the *Natural Vegetation Types of Colorado Maps*, by Melvin S. Morris and Ralph L. Dix, 1971.

1. DRY DOMAIN

"The essential feature of a dry climate is that annual losses of water through evaporation at the earth's surface exceed annual water gains from precipitation. This creates a deficiency of water. Since evaporation, which depends chiefly on temperature, varies greatly from one part of the earth to another, no specific value for precipitation can be used as the boundary for all dry climates. Thus, while 25 in. (610 mm.) of annual precipitation may produce a humid climate and forest cover in cool northwestern Europe, this same amount falling in the hot tropics produces semiarid conditions.

Two divisions of dry climates are commonly recognized: the arid desert (not present in the CORRC area), and the semiarid steppe. Generally, the steppe is a transitional belt surrounding the desert and separating it from the humid climates beyond. The boundary between arid and semiarid climates is arbitrary but commonly is defined as one-half the amount of precipitation separating steppe from humid climates.

Of all the climatic groups, dry climates are the most extensive; they occupy a quarter or more of the earth's land surface.

a. Steppe Division:

Steppes are areas that have a semiarid continental climatic regime in which, despite maximum summer rainfall, evaporation usually exceeds precipitation. Köppen classified the climate as *BSk*. Winters are cold and dry, summers warm to hot. The vegetation is steppe, sometimes called shortgrass prairie, and semidesert. Typical steppe vegetation consists of numerous species of short grasses that usually grow in bunches that are sparsely distributed. Scattered shrubs and low trees sometimes grow in the steppe and all gradations of cover into semidesert and woodland classes are present. Since ground cover is sparse, much soil is exposed. Many species of grasses and other herbs occur. Buffalograss is typical grass of the American steppe; other typical plants are the sunflower and locoweed.

The semidesert cover is a xerophytic shrub vegetation accompanied by a poorly developed herbaceous layer. Trees are generally absent. An example of semidesert cover is the sagebrush vegetation of the middle and southern Rocky Mountain region and the Colorado Plateau.

In this climatic regime, the dominant pedogenic process is calcification, with salinization on poorly drained sites. Soils contain a large excess of precipitated calcium carbonate and are very rich in bases. Mollisols are typical in steppe lands. The soils of the semidesert shrub are Aridisols, which have pedogenic horizons, are low in content of organic matter, have a clay horizon in some places, and have accumulations of various salts in some places. Humus content is small because the vegetation is so sparse.

1) **Great Plains-Shortgrass Prairie Province:**

a) Land-surface form. This region is characterized by rolling plains and tablelands of moderate relief. They are in a broad belt that slopes gradually eastward down from an altitude of 5,500 ft. (1,520 m.) near the foot of the Rocky Mountains to 2,500 ft. (760 m.) in the Central States. The plains are notably flat, but there are occasional valleys, canyons, and buttes. In the northern section, backlands and isolated mountains break the continuity of the plains.

b) Climate. The climate is a semiarid continental regime in which maximum rainfall comes in summer, but the total supply of moisture is low. Evaporation usually exceeds precipitation. The average annual temperature is 45°F. (8°C). throughout most of the region but can reach 60°F. (15°C.) in the south. Winters are cold and dry; the summers warm to hot. The frost-free season ranges from fewer than 100 days in the north to more than 200 days in Texas. Precipitation ranges from 10 in. (250 mm.) in the north to more than 25 in. (620 mm.) in the south.

c) Vegetation. Steppe, sometimes called shortgrass prairie, is a formation class of short grasses usually bunched and sparsely distributed, and is characteristic of this province. Scattered trees and shrubs occasionally appear in the steppe, and exist all gradations of cover into semidesert and woodland formations. Since ground cover is scarce, much soil is exposed. Many species of grasses and herbs grow in this province; a typical grass is buffalograss; sunflower and locoweed are typical plants.

d) Soil. In this climatic regime, the dominant pedogenic process is calcification; salinization is dominant in poorly drained sites. Soils contain a large excess of precipitated calcium carbonate and are rich in bases. Mollisols are typical. Humus content is small because vegetation is sparse.

e) Fauna. Large herds of buffalo migrated with the seasons across the steppe plains. Now the pronghorn antelope is probably the most abundant large mammal, but mule deer and white-tailed deer are often abundant where brush cover is available along stream courses. The white-tailed jackrabbit occupies the northern part of the province and the black-tailed jackrabbit, the area south of Nebraska. The desert cottontail is widespread. The lagomorphs, the prairie dogs, and several other small rodents are preyed upon by the coyote and several other mammalian and avian predators; one of these, the black-footed ferret, is classed as an endangered species.

The lesser prairie chicken, formerly abundant, is now classed as threatened, Sage grouse, greater prairie chickens, and sharp-tailed grouse are present in the area. Among the many smaller birds are the horned lark, lark bunting, and western meadowlark. The threatened golden-cheeked warbler inhabits the southeastern portion where the Ashe juniper is present. Construction of stock ponds has created an important "duck factory" in the northern Great Plains.

f) Sections. This province includes the following sections: Grama- Needlegrass-Wheatgrass, Wheatgrass-Needlegrass, and Grama-Buffalograss.

2) Rocky Mountain Forest Province:

a) Land-surface form. The Rocky Mountains are rugged glaciated mountains as high as 14,000 ft. (4,300 m.) Local relief is between 3,000 ft. (900 m.) and 7,000 ft. (2,100 m.). Several sections have intermontane depressions of "parks" that have floors less than 6,000 ft. (1,800 m.) in altitude. Many high-elevation plateaus composed of dissected, horizontally layered rocks are in Wyoming, Oregon, and Utah.

b) Climate. The climate is a semiarid steppe regime in which, despite considerable variation with altitude, precipitation falls in winter. Total precipitation is moderate but is greater than on the plains to the west and the east. In the highest mountains, a considerable part of the annual precipitation is snow; however, permanent snowfields and glaciers cover only relatively small areas. Bases of these mountains receive only 10 to 20 in. (250 to 500 mm.) of rainfall. Upward, precipitation increases to 40 in. (1,000 mm.) and temperatures decrease.

Climate is influenced by the prevailing west winds and the general north-south orientation of the mountain ranges. East slopes are much drier than west slopes. Within this region, the individual mountain ranges have similar east-west slope differences. Average annual temperatures are mainly 35° to 45° F. (2° to 7°C.) but reach 50°F. (10°C.) in lower valleys.

c) Vegetation: Well marked vegetational zones are a striking feature. Their distribution is controlled mostly by a combination of altitude, latitude, direction of prevailing winds, and slope exposure. Generally, the various zones are at higher altitudes in the southern part of the province than in the northern. The uppermost zone, the alpine, is characterized by alpine tundra and the absence of trees. Next below is the subalpine zone, dominated in most places by Engelmann spruce and subalpine fir. The montane zone, immediately below the subalpine, is characterized by the dominance of ponderosa pine and Douglas-fir. Frequently there is alternation in the occurrence of these exposed slopes, and Douglas-fir on the higher, moister, and more sheltered ones.

After fire in the subalpine zone and in the upper part of the montane zone, the original forest trees are usually replaced by aspen or lodgepole pine.

Grass, often mixed with sagebrush, regularly covers the ground under open ponderosa pine forests and some treeless areas. These treeless openings usually are small, and they often alternate, according to slope exposure, with ponderosa pine

forest. At the lower edge of the montane zone, they may be continuous with the adjacent grass and sagebrush belt.

Below the montane belt is the foothill (woodland) zone. Dry rocky slopes in the zone often have a growth of shrubs in which mountain-mahogany and several kinds of scrub oak are conspicuous. Along the border of the Colorado Plateau Province, the ponderosa pine and pinyon-juniper associations frequently alternate extensively according to exposure of the slopes.

Unforested parks are a conspicuous feature of this province. Many are dominated by grasses, but some are covered largely by sagebrush and other shrubs.

d) Soils. In the Rocky Mountains, soil orders occur in zones corresponding to the vegetation zones. These range from Mollisols and Alfisols in the montane zone to Aridisols in the foothill zone. In addition, because of steep slopes and recent glaciation, there are areas of Inceptisols.

e) Fauna. Common large mammals include elk, deer, mountain lion, bobcat, and black bear. Grizzly bear and moose are in the northern portions. Small mammals include mice, squirrels, martens, chipmunks, and bushy-tailed rats. Hawks and owls inhabit most of the region. The numerous, more common birds are the chestnut-backed chickadee, red-breasted nuthatch, gray jay, and Steller's jay. Blue and ruffed grouse are the most common upland game birds.

f) Sections. In the northwestern part of the province, in the Blue Mountains and the Salmon River Mountains, grand fir is commonly associated with Douglas-fir. In the southeastern part, in Colorado and New Mexico, ponderosa pine is associated with Douglas-fir in the montane zone. These areas thus form distinct sections and are separated from the central Douglas-fir section. The three sections are accordingly named: Grand Fir-Douglas-fir Forest, Douglas-fir Forest, Ponderosa Pine-Douglas-fir Forest."

D. County Descriptions

1. Counties within the *Great Plains-shortgrass Prairie Ecoregion Province*.

a. WELD COUNTY:

1) General Description (Sources: Weld County Profile, 1972; Weld County Comprehensive Plan, 1973; Weld County Information Service, 1991. Colorado Cooperative Extension Service.)

Weld county occupies 4004 square miles of the Colorado piedmont section in the Great Plains Physiographic Province. Topography is level to rolling uplands with stream valley lowlands underlain by gently dipping sedimentary rock beds. The alluvial fill of streams and rivers are the best sources of groundwater in the county. The Denver and Larimer Formations and Fox Hills sandstones are second in importance, while the Pierre shales are the least important, surface drainage is dendritic with uniform stream gradients. Consequently, many small watershed basins are closely linked to one another in a large network of streams and tributaries. The South Platte River is the largest in this system with the Big Thompson, Cache la Poudre, and St. Vrain Rivers and Boulder Creek as its main tributaries. The Climate is semiarid steppe with moderately cold winters and warm summers. This region has low relative humidity and less than 15 inches of annual precipitation mainly in the form of thunderstorms, occasionally accompanied by hail and strong winds. With a growing season of 140 days native grasses and shrubs are supported but successful cultivation of most crops depends upon irrigation from large amounts of diverted water, primarily from the west slope of the Front Range by the Colorado-Big Thompson Project. The predominant vegetation of the county is mixed or short-grass prairie with some areas of low shrubs. There are streamside forests of alder, willow and poplar on the alluvial plains of river valleys and along the margins of streams and creeks. Natural resources include coal, oil, gas, sand, gravel and agricultural and stock lands. Weld county is one of the richest agricultural areas in Colorado and the nation.

2. Counties Within both the *Great Plains-Shortgrass Prairie and Rocky Mountain Forest Ecoregion Provinces*.

a. LARIMER COUNTY:

1) General Description: (Sources: Larimer County Information Service, 1991. Colorado Cooperative Extension Service; Larimer County Land Use Plan, 1988. Larimer County Planning Department; Larimer-Weld Region Land Use Alternatives: Analysis of 20 Year Growth Demands and impacts, 1977. Larimer-Weld Regional Council of Governments).

Larimer County was created by an act of the Territorial Legislature in 1861. Located in north-central Colorado, Larimer County is immediately east of the Continental Divide

and lies primarily in the South Platte watershed with the northwest corner drained by the Big Larimer River, the main tributary of the North Platte River. Twice the size of the state of Rhode Island, Larimer County has an area of 2640 square miles, 64 miles in length and 50 miles in width. Current boundaries were formed in 1909 extending west to the Medicine Bow mountain range and Jackson County, the north by Wyoming, the east by the plains and irrigated valleys of Weld County and the south by Boulder and Grand Counties. County elevations range from 4800 feet to 13,562 feet. Climate in the north and east is relatively mild with long, warm summers and open winters while the mountainous west experiences more severe rain and thunder storms with very heavy snowfall in winter.

The portion of the county which lies east of the foothills of the Rocky Mountains is typical of the Western Great Plains. Prior to settlement, short-stemmed grasses dominated with trees concentrated along creeks, streams and rivers. Until the first half of this century crop production was limited to dry-land farming.

b. BOULDER COUNTY

1) General Description: (Source: Boulder County Information Service. 1991. Colorado Cooperative Extension Service).

Established in 1861, Boulder County rests in the South Platte watershed along the eastern slope of the Rocky Mountains in the north-central Colorado. The county has the widest range of elevation for its size in the state ranging from 4,950 feet to 14,255 feet at the top of Long's Peak. It lies entirely on the western rim of the northern extremity of the Front Range mineral belt in pre-Cambrian terrain. There are nine soil association groups in the county. The eastern half is surfaced by sedimentary rocks with Pleistocene moraine in the mountains and west. High mountains on the western edge of the county block Pacific atmospheric moisture so the primary source of moisture is the Gulf of Mexico. The general topography of the county strongly influences the general climatic low relative humidity and low precipitation which then increases with elevation in the mountains.

3. Counties Within the *Rocky Mountain Forest Ecoregion Province*.

a. JACKSON COUNTY

1) General Description: (Sources: Jackson County Information Service, 1991. Colorado Cooperative Extension Service; Jackson County Comprehensive Master Plan, 1978. Jackson County Planning Comm.).

Jackson County was formed in 1909 from part of Larimer County with Walden as the county seat and was incorporated in 1890. The county lies on the east slope of the Rocky Mountains and is bordered on three sides by the Park Range on the west, the

Rabbit Ears Range on the south and the Medicine Bow Range on the east. There are fifteen soil association groups. Sedimentary rocks underlay the western county while mountainous regions are comprised of metamorphic and igneous rocks and ores. Leading mineral products have changed form over the past century since silver was discovered in North Park in 1879. Coal production dominated in the 1890s and early 1900s, fluorspar from the 1920s into the 1950s and petroleum and gas in the 1960s. The county's many streams, lakes, rivers, and forests and mountains now attract outdoor recreation as a significant economic input. Topography varies from rugged alpine tundra, rock and ice of the Continental Divide area in the western and southern portions of the county to inter-mountain hills and narrow valleys in the county's center. A major portion of the bottom land along streams is irrigated hay meadow and irrigated sagebrush grazing lands. Mountain slopes are heavily covered with aspen, spruce, pine, and fir up to timberline. Two major impoundments, Walden Lake and MacFarlane Reservoir are located in the county's south and central regions with primary streams being the Canadian and Michigan rivers and the upper reaches of the North Platte River. The general topography of the county strongly influences the county's climate resulting in strong climatic variations with low relative humidity and low precipitation in the plains while significantly higher in the mountains.

b. GRAND COUNTY

1) General description: (Source: Grand County Information Service. 1991. Colorado Cooperative Extension Service.)

Established in 1874, Grand County, located in north-central Colorado on the western slope of the Rocky Mountains, is comprised of Middle Park, its surrounding Continental Divide, Rabbit Ears Range and Williams Fork Mountains and includes the Colorado River Valley. The source of the Colorado River is Grand Lake and its tributaries in the county include the Williams Fork and Fraser Rivers. Topographic features strongly influence local climate. Approximately 54% of the county's area is devoted to national forests, parks and monuments including Rocky Mountain National Park, Shadow Mountain Recreation Area, Arapaho National Forest and Grand Lake.

Section 3

PRIORITY ISSUES

A. Background:

CORRC, through a series of "issue identification and scoping" activities, has related priority issues to the three landscape zones identified in Figure 2, page 6.

Being mindful of the descriptive information in Section 2, the three landscape zones "overlay" the ecoregions and political boundaries of the study area (Figure 4). The function of the zones is to provide a biogeographic focal point to identify issues related to biodiversity, resource management and the human-wildland interface.

Definitions of the **issue categories** are:

- * **Biodiversity** - has two components: (1) **plants and animals (bio)**, and (2) **their richness**, the number and **diversity** of individual species of plants and animals or in combination as ecosystems in a geographic location.
- * **Resource Management** - providing supervised and selective stewardship for the maintenance, protection and sustained use of timber, mineral, wildlife, water and recreational resources for future generations.
- * **Human-Wildland Interface** - where human activities and influences physically meet, integrate and may modify naturally occurring plants, animals and ecosystems.

These evolved from the initial issue identification workshop (October, 1991). They were crafted to be "user friendly" for the CORRC survey used to identify and prioritize issues.

The series of issue identification and scoping activities included the following:

- * an issues workshop (October, 1991), with participants from NGO's¹, city, county, state and federal agencies, the private sector, and citizens .
- * CORRC steering committee work sessions (January, 1992) where issues from the October, 1991 were refined and issue categories defined for purposes of the CORRC survey.
- * CORRC cooperative Project Task Force (December, 1992 - present), has been reviewing survey findings, priority issues, and considering project options to address priority issues.

¹ Non-governmental Organizations. Organizations that have interest in biodiversity and resource management issues; how governmental agencies, the public and private sectors address these types of issues.

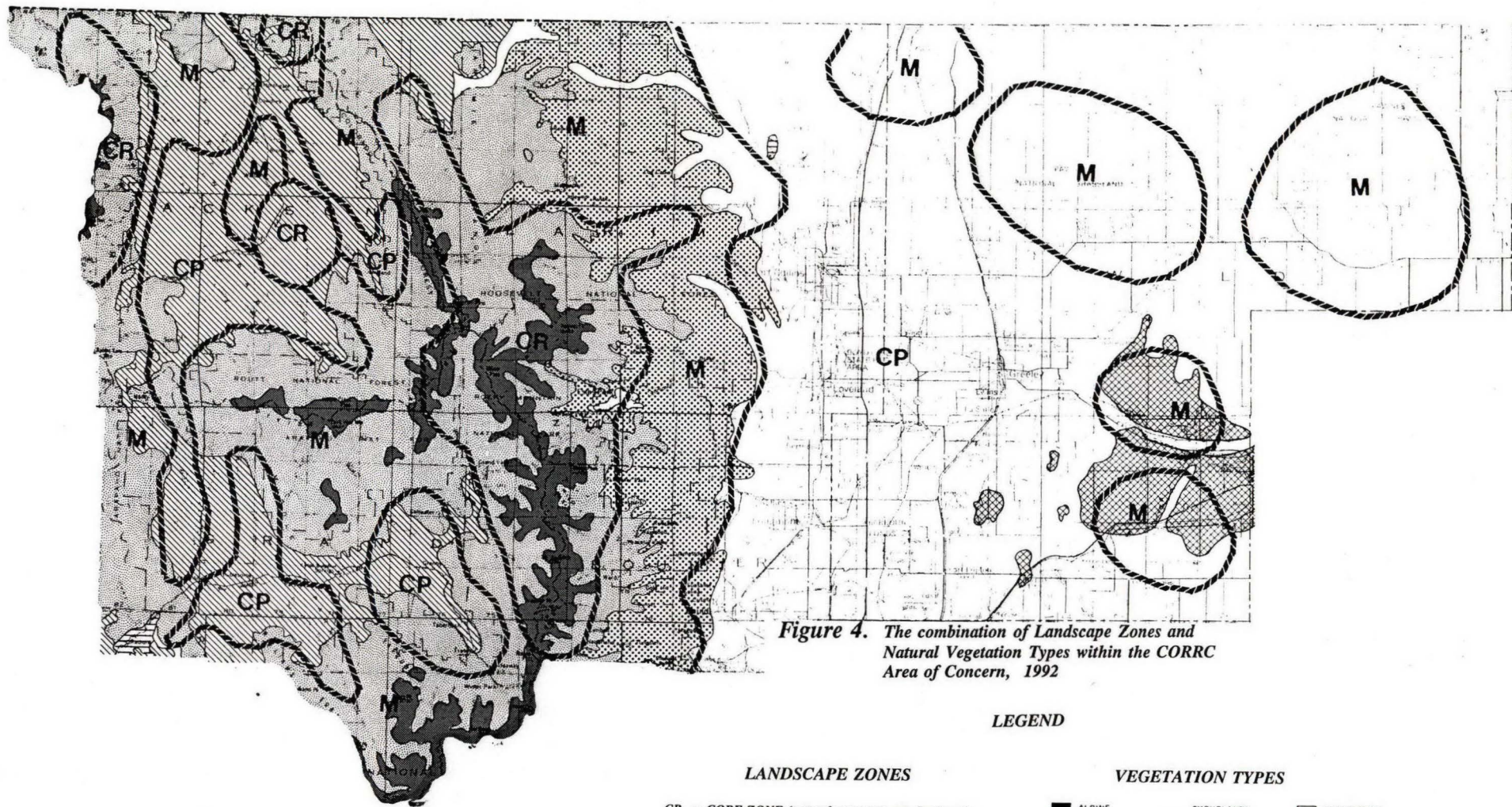


Figure 4. The combination of Landscape Zones and Natural Vegetation Types within the CORRC Area of Concern, 1992

LEGEND

LANDSCAPE ZONES

CR = CORE ZONE (natural processes are dominant)
M = MANAGEMENT ZONE (natural processes and human influences are codominant or interact)
CP = COOPERATION ZONE (human influences are dominant)

VEGETATION TYPES

ALPINE	SHRUBLANDS	GRASSLANDS
FORESTS	Pinyon-Juniper	
Subalpine	Oak-Bush	
Montane	Sagebrush	
	Greasewood	
	Shadscale	
	Sandsage	

*From the Natural Vegetation Types of Colorado Maps, by Melvin S. Morris and Ralph L. Dix, 1971.

Given the CORRC study area, zone configuration and number and diverse sources of responses it is interesting to note the number of issues by type or category through the first three issue identification and scoping activities (Table 1).

Table 1. The evolution of issues identified by issue categories, 1991-92.

Issue Category	10/91 Issue Workshop	1/92 Steering Committee Work Session	6-11/92 Issue Survey
Biodiversity	5	16	62
Resource Management	13	17	76
Human/Wildlands Interface	11	12	71
Total Issues	29	35	209

B. Priority Issues:

Issue prioritization is presented by issue category within the Core, Resource Management and Cooperation zones. A subset of issues within each category is provided.

1. Core Zone - land area where natural processes are dominant.

Table 2, shows that biodiversity and ecosystem management are the highest priority issues. The order of priority is;

- a.* BD-2, Identify and reduce human impacts, and external influences.
- b.* BD-3, Identify, monitor, restore and protect natural processes, threatened and endangered species and native wildlife populations.
- c.* RM-4, Implement environmentally sensitive policies with emphasis on ecosystem management.

Primary land areas within the Core zone include three biosphere reserves (Fraser Experimental Forest, Niwot Ridge, Rocky Mountain Biosphere Reserve), several wilderness areas, Rocky Mountain National Park, and some protected state and private lands. When comparing management responsibility for these land areas with the survey response groups' priority issues, the basis for developing issue driven cooperative efforts (information sharing, research, and public education and outreach) should be apparent.

Table 2. Highest priority resource issues within the CORRC study area core zone as identified by survey response groups, 1992.

Priority Rank	Survey Response Group					
	Citizen	NGO	Local	County	State	Federal
First	BD-2	BD-3	BD-2	BD-2	RM-4	BD-3
Second	BD-3	BD-2	BD-3	BD-3	BD-1	RM-4
Third		BD-1	RM-4			
<p style="text-align: center;"><u>Biodiversity Issues</u></p> <p>BD-1 = Critical habitat protection, expansion and restoration. BD-2 = Identify and reduce human impacts and external influences. BD-3 = Identify, monitor, restore and protect natural processes, threatened and endangered species and native wildlife populations.</p>						
<p style="text-align: center;"><u>Resource Management Issues</u></p> <p>RM-4 = Implement environmentally compatible policies with emphasis on ecosystem management.</p>						
<p>Note: A specific listing of survey responses for each "issue category" can be found in Appendix D.</p>						

2. Management Zone - land areas where natural processes and human influences are codominant or interact.

Table 3, shows that ecosystem management and biodiversity are the highest priority issues. The order of priority is:

- a.* RM-4, Implement environmentally compatible policies with emphasis on ecosystem management.
- b.* BD-2, Identify and reduce human impacts and external influences.

Table 3. Highest priority resource issues within the CORRC study area management zone as identified by survey response groups, 1992.

Priority Rank	Survey Response Group					
	Citizen	NGO	Local	County	State	Federal
First	BD-2	RM-4	RM-4	RM-4	HW-1	BD-2
Second	RM-4	BD-1	RM-2	BD-4	BD-2 BD-3	RM-4
Third	RM-1	BD-3	BD-2	BD-1	RM-4	BD-4
<p style="text-align: center;"><u>Biodiversity Issues</u></p> <p>BD-1 = Critical habitat protection, expansion and restoration. BD-2 = Identify and reduce human impacts and external influences. BD-3 = Identify, monitor, restore and protect natural processes, threatened and endangered species and native wildlife populations. BD-4 = Riparian/wetland protection and restoration.</p>						
<p style="text-align: center;"><u>Resource Management Issues</u></p> <p>RM-1 = Restoration of habitat impacted by extractive land uses. RM-4 = Implement environmentally compatible policies with emphasis on ecosystem management.</p>						
<p style="text-align: center;"><u>Human/Wildland Interface Issues</u></p> <p>HW-1 = Implement low impact policies that contribute to both economic and environmental sustainability.</p>						
<p>Note: A specific listing of survey responses for each "issue category" can be found in Appendix D.</p>						

Primary land areas within the Management Zone include but are not limited to the Arapaho-Roosevelt N.F., the Colorado State Forest, Lory State Park, the Pawnee Grasslands and areas managed by private organizations such as The Nature Conservancy. Again, if one compares management responsibility for these areas with the survey response groups' priority issues, a pattern for cooperative efforts is very evident.

3. Cooperative Zone - land areas where human influences are dominant.

Table 4 shows that riparian/wetland protection and restoration, determining and reducing negative human influences on adjacent wildlands, agricultural land and critical resources are the highest priority issues. The order of priority is;

- a. HW-2, determine and reduce negative human influence on adjacent wildlands, agricultural lands and critical resources.**
- b. BD-4, Riparian/wetland protection and restoration.**
- c. HW-1, Implement low impact policies that contribute to both economic and environmental sustainability.**
- d. BD-1, protection, expansion and restoration of critical wildlife habitat.**

Land areas within the Cooperation Zone include the mix of lands in private, municipal, university and county ownership outside the Core and Management Zones. Some of the lands in the Cooperation Zones are already being "protected" as open space, parks, urban wildlife habitat, and for environmental education activities under a range of agreements. Similar to both the Core and Management zones, survey response group issue priorities in the cooperation zones suggest which entities should be cooperating to address issues.

Table 4. Highest priority resource issues within the CORRC study area cooperation zone as identified by survey response groups, 1992.

Priority Rank	Survey Response Group					
	Citizen	NGO	Local	County	State	Federal
First	HW-2	HW-2	RM-4 BD-1	BD-4	HW-3	HW-1
Second	BD-4	BD-4	BD-4	HW-2	HW-1	BD-1
Third			BD-3	HW-1		
<u>Biodiversity Issues</u>						
BD-1 = Critical habitat protection, expansion and restoration.						
BD-3 = Identify, monitor, restore and protect natural processes, threatened and endangered species and native wildlife populations.						
BD-4 = Riparian/wetland protection and restoration.						
<u>Resource Management Issues</u>						
RM-4 = Implement environmentally compatible policies with emphasis on ecosystem management.						
<u>Human/Wildland Interface Issues</u>						
HW-1 = Implement low impact policies that contribute to both economic and environmental sustainability.						
HW-2 = Determine and reduce negative human influences on adjacent wildlands, agricultural lands and critical resources.						
HW-3 = Increase public environmental education.						
Note: A specific listing of survey responses for each "issue category" can be found in Appendix D.						

Section 4

CORRC PROGRAM RECOMMENDATIONS

A. CORRC Role Definition:

Prior to dealing with program items, it is important to revisit CORRC's role as a cooperative. The feasibility survey (specific questions) solicited input on the role, willingness to participate in cooperative activities and the form this role should take.

Figure 5 clearly shows overwhelming support for education and research as CORRC's primary role. Written comments were directed to roles not considered appropriate to CORRC - lobbying, taking positions on controversial issues, intervening in existing entity policy and management responsibilities, and influencing public land designations and private property rights.

Figure 6 identifies the types of cooperative efforts CORRC, its partners, should entertain. In the context of propriety issues, cooperation within CORRC (and among partners), should occur with the following emphasis:

1. Information sharing
2. Sponsoring projects
3. Joint education and research activities.
4. Information forums

It should be noted that citizens and NGO's (non-governmental organizations) expressed the desire to have more and better background information on environmental and resource management issues.

With the exception of individual citizens, all the entities within the remaining survey response groups indicated an interest in becoming a partner in CORRC (Figure 7). This interest represents a "reaffirmation" for those who signed the initial CORRC MOU. Some citizens may be interested in becoming partners in the future but most do not have the resources for such an activity.

B. Program Elements - Deliverable Products

The CORRC program can be divided into four deliverable product elements. These are:

- * Data gathering and sharing to address priority issues within the CORRC area.
- * Joint projects to address priority issues with the CORRC area.
- * Educational and outreach recommendations.

Fig. 5. Survey preference for education & research as CORRC's main role, 1992.

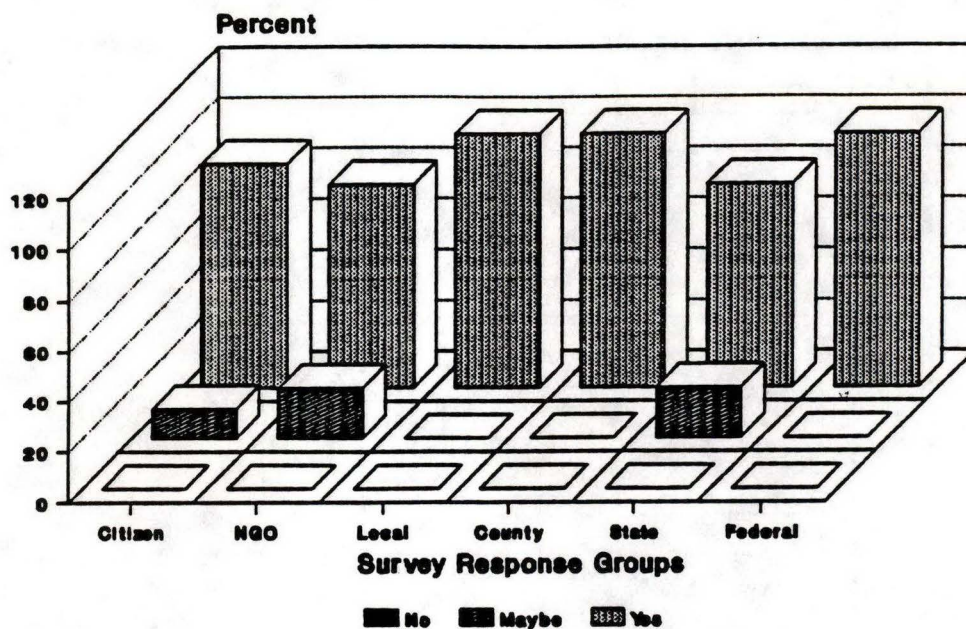


Fig. 6. Percent of Responses Favoring Specific CORRC Coop Efforts, 1992.

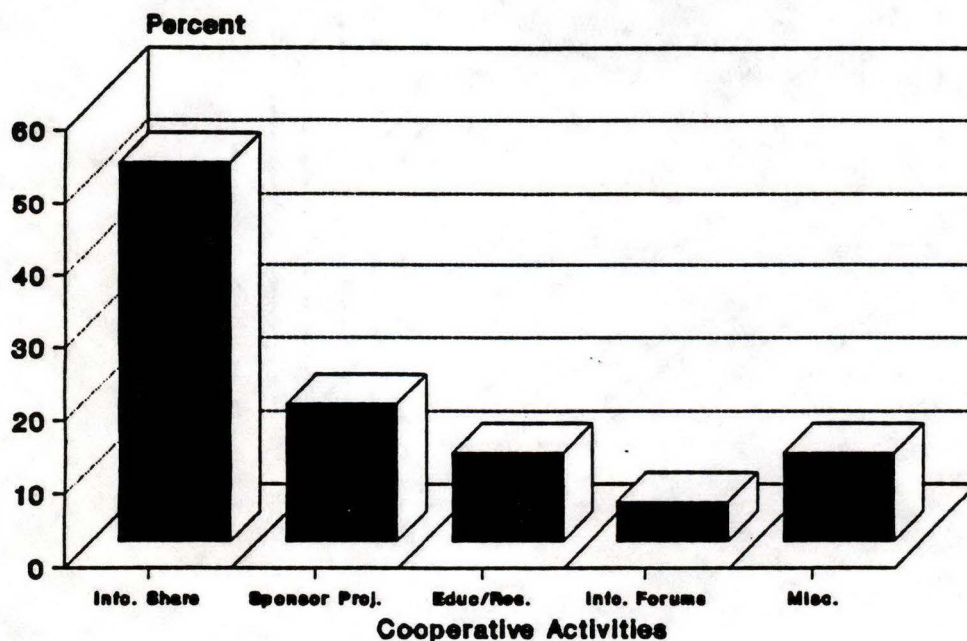
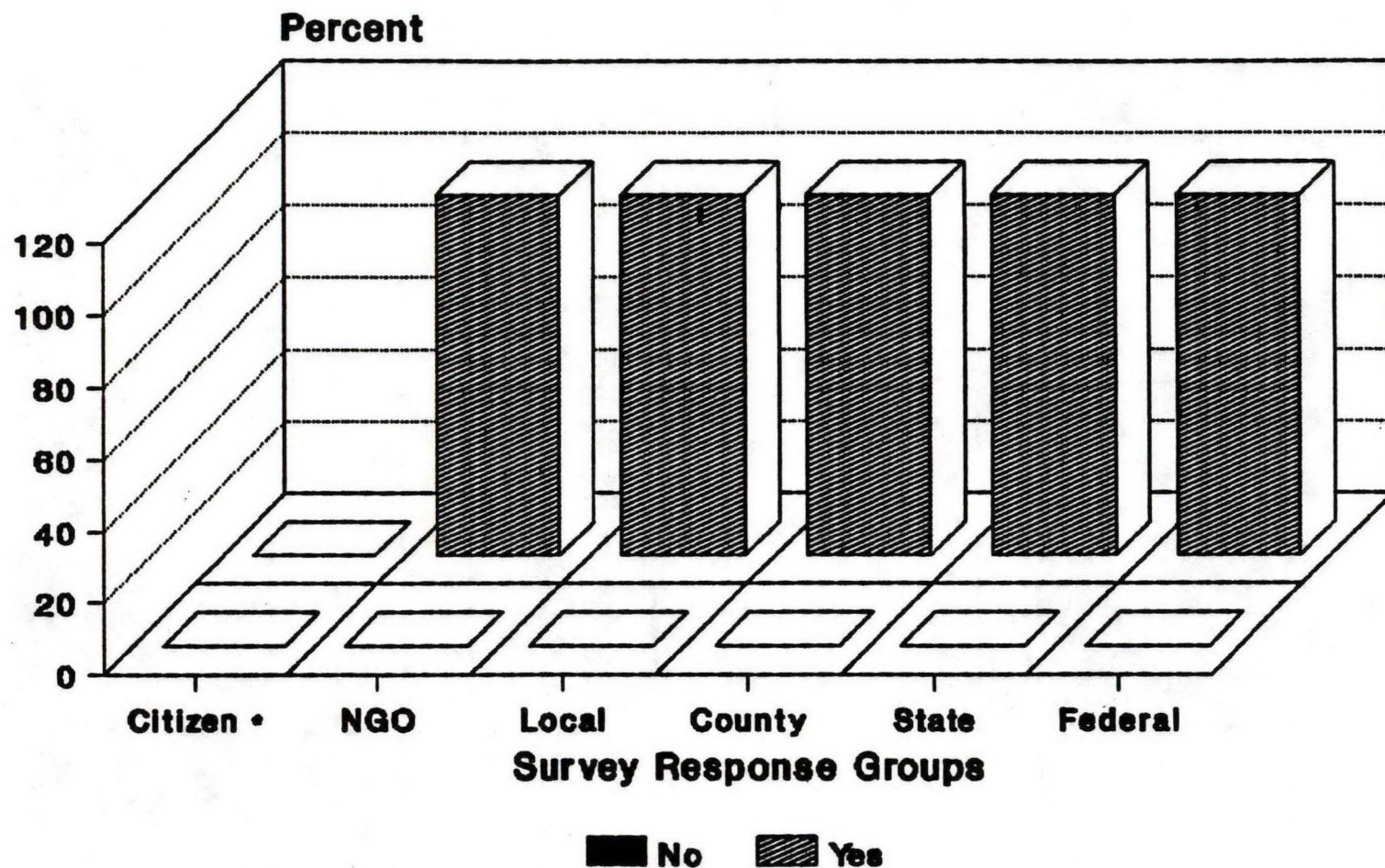


Fig. 7. Survey response for being a partner, cooperating in CORRC, 1992.



• Partnership resources not available.

* Affiliating with other established or emerging programs that hold compatible or related purposes.

1. Data Sharing Cooperative- on going:

a. In 1991, several parties entered into a data sharing cooperative to demonstrate the feasibility of sharing environmental and baseline resource data (Appendix E).

b. Six 7 1/2 minute U.S.G.S. quad area (Estes Park, Glen Haven, Longs Peak, Panorama Peak, Allens Park and Raymond) were selected as a test site.

c. Issues in the six quad area important to the cooperators (and related to biodiversity, resource management, and human influences) continue to be:

- * Fire management and suppression coordination.
- * Wildlife habitat and migration.
- * Rights-of-way and transportation management.
- * Development and special uses.

d. Data sharing deliverable products to date include non-restricted data sets, GIS maps and associated evaluation reports. Examples of G.I.S. maps are two views of vegetation types (Figures 8 and 9). Examples of reports include:









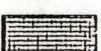



Sapir, Gil. 1991. USFS Arapaho-Roosevelt National Forest data sharing project-fire hazard modeling. Unpublished paper. Colorado State University, Fort Collins, Colo.

Alden, Susan, Silvana Della Manna and Lowell Lewis. 1990. GIS viewshed analysis of selected areas adjacent to Rocky Mountain National Park. Unpublished paper. Colorado State University, Fort Collins, Colo.

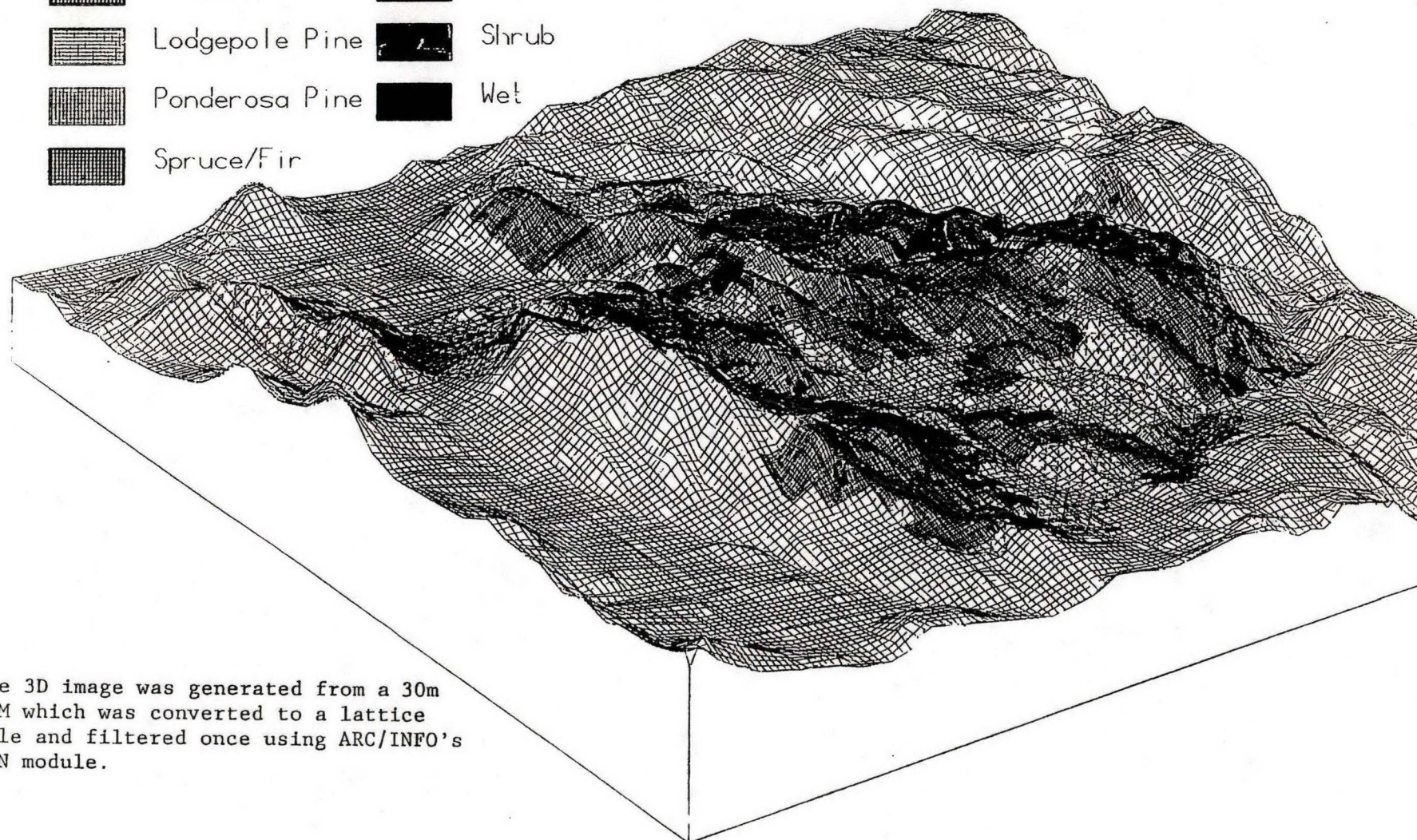
Bridgford, Lynne L. 1992. The integration of GIS and RIS to enhance resource management. Professional paper. Department of Recreational Resources and Landscape Architecture. Colorado State University, Fort Collins, Colo.

In addition to the six quad demonstration areas, data have been transferred from the US Forest Service to CSU for the 108 USGS maps (1:24,000 scale) shown in Figure 10. Data sets include DEM, land ownership, hydrography, roads and trails, Landsat TM, and Forest Service resource data. Colorado Division of Wildlife data and a detailed riparian inventory will be added in the near future.

Legend

	Private Land		Forbs
	Aspen/Birch		Grass
	Blue Spruce		Rock
	Douglas-Fir		Right of Way
	Lodgepole Pine		Shrub
	Ponderosa Pine		Wet
	Spruce/Fir		

Vegetation Types



The 3D image was generated from a 30m DEM which was converted to a lattice file and filtered once using ARC/INFO's TIN module.

Figure 8. Vegetation types, 3-D image. CORRC G.I.S. Data Cooperative Demonstration, 1992.

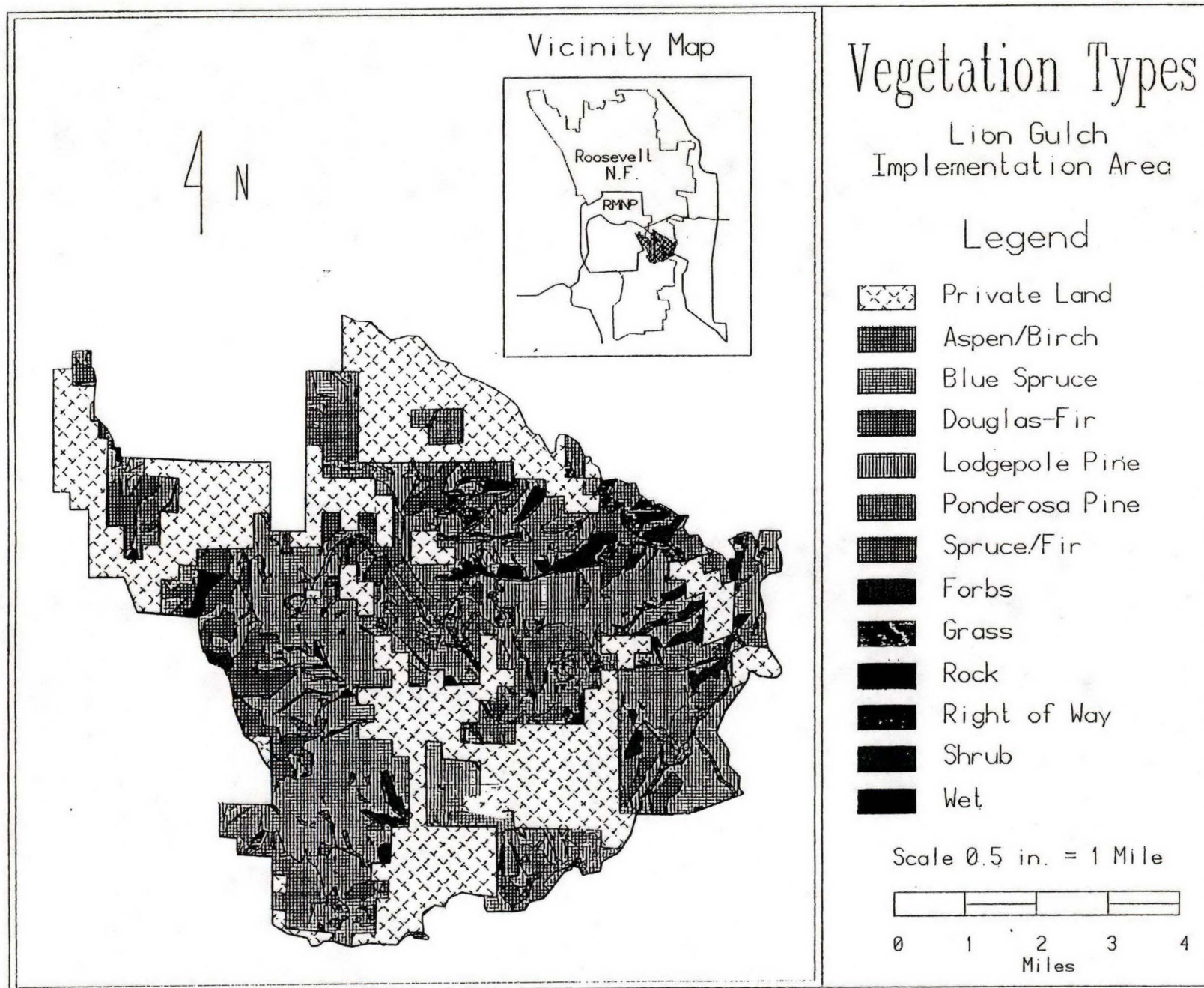


Figure 9. Vegetation types, flat image. CORRC G.I.S. Data Cooperative Demonstration, 1992.

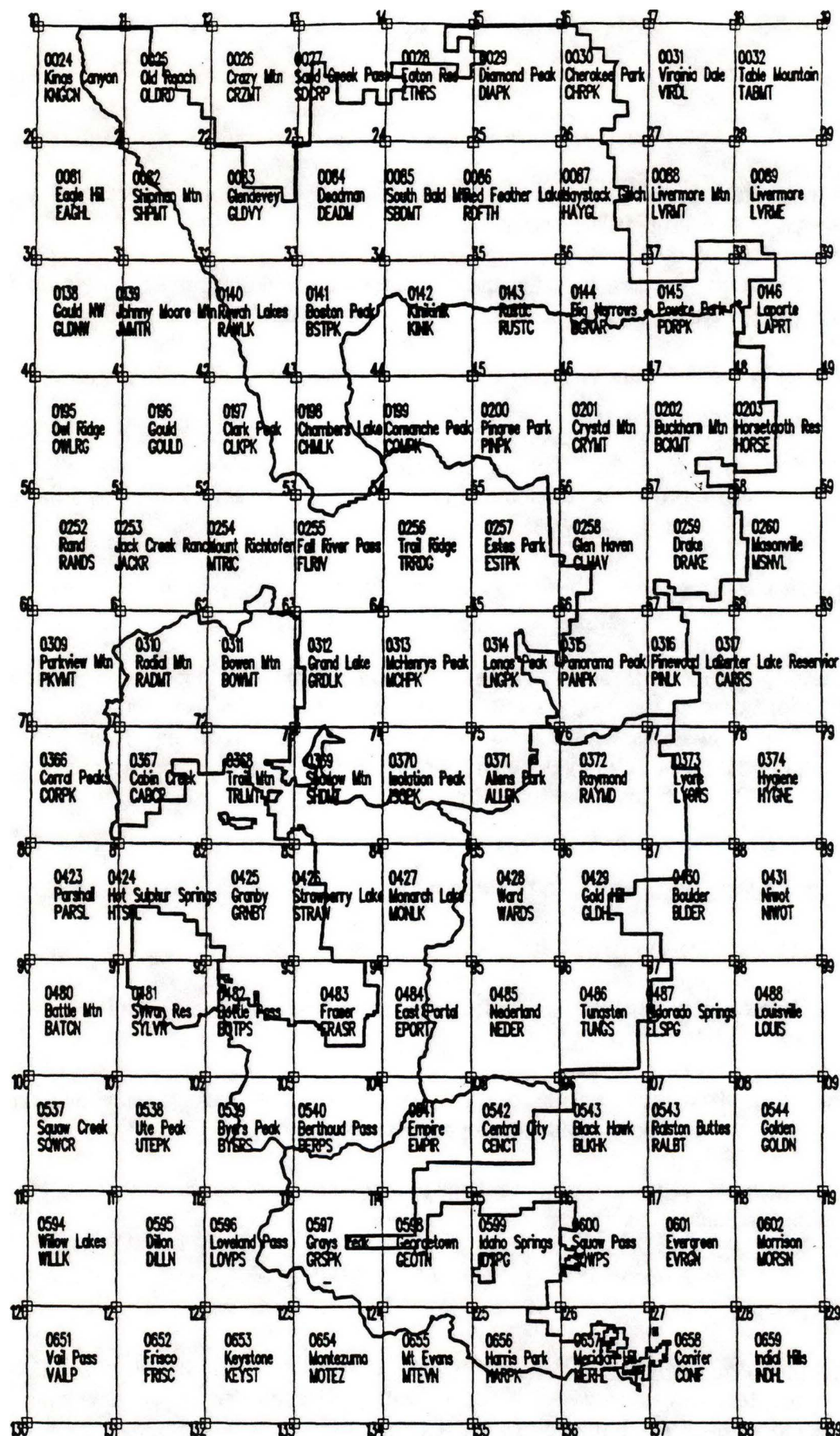


Figure 10. USGS quad legend for U.S. Forest Service G.I.S. data base, Arapaho-Roosevelt N.F., 1992.

e. Data Sharing Recommendations to assure deliverable products in the near future are:

- 1) Formal steps be taken to extend the data sharing project for a period of 5 years - January 1, 1993 through December 31, 1998.
- 2) Formal steps be taken to make the College of Natural Resources, Colorado State University the focal point for storage and exchange of data (underway 1993).
- 3) A project leader(s) and Steering committee be established from cooperating entities (underway 1993).
- 4) The Project leader(s) and Steering committee develop a short and long range work plan to maximize project benefits and identify necessary project requirements including financial needs (underway 1993).

2. Joint Research/Management Projects to address Priority Issues Within the CORRC Area of Concern -- New Initiatives

a. Section 3, (pages 15 through 22), has provided direction for cooperative projects to address priority issues within the CORRC area. To scope down from an overwhelming number of specific items within issue categories, a Project Working Group (CORRC cooperators per 1992 MOU) developed a short list of highest priority research projects on January 22, 1993 based upon the following.

b. Criteria for project selection in the scoping process are:

- 1) Proposed projects must address one or more highest priority issues, issue categories.
- 2) The interest and capability exists for partners to enter into a cooperative agreement and produce an "end product".
- 3) Project products must consider information gathering and sharing, and education and outreach to generate better understanding of issues.
- 4) Projects must focus on attributes related to biodiversity, resource management and/or the human/wildland interface.
- 5) Projects must recognize the mix of sustainable environmental settings and development.

c. **Recommended Projects - Deliverables:** Based upon the Project Working Group's scoping, the following represents initial projects recommended to be developed and implemented with CORRC and among CORRC partners.

1) Core Zone

* Habitat mapping for lynx and wolverine in Colorado. Wolverine (*Gulo gulo*) and lynx (*Lynx canadensis*) are endangered species in the state of Colorado, and are candidate species for federal listing. This study's goals include development of habitat models for lynx and wolverine and use of Geographic Information Systems to identify and map areas of potential habitat. This information is necessary to establish the feasibility of restoring viable populations of these species in Colorado. (Priority issues BD-1 and BD-3; Table 2, page 18).

Project Leader: Sandy Haire, U.S. Fish & Wildlife Service.

Potential Cooperators: U. S. Fish & Wildlife Service, Colorado State University, Colorado Division of Wildlife, Rocky Mountain National Park, U.S. Forest Service.

Projected Period: Tentative 1993-96.

2) Core Zone/Management Zone

* An elk management study that includes Rocky Mountain National Park (RMNP), its eastern borders and Estes Valley. This study will consider ongoing and future information needs of the Rocky Mountain Council for Cooperative Wildlife Management regarding the elk management situation. The study will include a representation of the Core and Management Zones, an area where there has been significant human influence on elk populations and habitat. (Priority issues BD-1 and BD-2; Table 2, page 18; Table 3, page 19).

Project Leader: Not identified.

Potential Cooperators: Rocky Mountain National Park, Arapaho-Roosevelt National Forest, Colorado Division of Wildlife, Larimer CO., Estes Park.

Project Period: Unknown.

3) Management Zone

* Historic Natural Variability of National Forest Ecosystems. This project is intended to document the range of natural variability of National Forest ecosystems from "recent history" to present time. The purpose is to provide baseline information/data about some of the components of biological diversity and enhance forest ecosystem management. (Priority issue RM-4; Table3, page 19).

Project Manager: Dale Brockway, U.S. Forest Service.

Potential Cooperators: Colorado Division of Wildlife, U.S. Fish & Wildlife Service, Rocky Mountain N.P., University of Colorado, Colorado State University, Colorado State Forest Service.

Project Period: RFP is being advertized. Tentative 1993-94.

4) Cooperation Zone

* A study "Biodiversity of Open Space Grasslands at a Suburban/Agricultural Interface". The goal of this study is to develop predictive models that can be applied by parties advocating and planning open space systems in similar environments within CORRC's Cooperation Zone and the Colorado Front Range Corridor.

Project Leader: Dr. Carl Bock, University of Colorado

Potential Cooperators: U.S. Fish & Wildlife Service, City of Boulder, Colorado Division of Wildlife, (other cities?).

Project Period: 1993-1997.

5) Encompassing All Zones

* A definitive overview paper on biodiversity issues within the CORRC area. This paper will describe biological and land use issues related to the conservation of biodiversity within the CORRC area. These issues will be determined with input from involved agencies and cooperators, and will set the stage for the development of proactive plans and models for the prediction of future levels of biodiversity.

Project Leader: Rick Schroeder

Potential Cooperators: Input and review will be solicited from all CORRC cooperators, and other concerned parties.

Project Period: Literature Search 2/94; Regional expert input 4/94; Final document 7/94.

d. Summary Comments: Project recommendations have been mindful of criteria for project selection (page 29). In addition, they reflect the fact that CORRC is in the early phases of becoming an affective cooperative as well as an affiliate with the U.S. Man and the Biosphere program. These projects fall under the umbrella of the identified highest priority issues. They also constitute deliverable products within the existing CORRC framework and available partner resources.

It should be noted that a competitive process (beyond what has been commented on under criteria for selection) has not been deemed necessary or appropriate due to the fact that there is no "pool of research funds" available to CORRC for funding projects based upon RFP's. As CORRC matures, partners may be in the position to establish a research budget item to be matched from "outside sources". These funds may then be awarded on a competitive basis assuming there is an RFP and proposals submitted to CORRC.

It should also be noted that in the proposed CORRC organization recommendations, the Research and Management Project committee is to continue to monitor issues and develop both short and long term deliverable products (page 44).

3. Education and Outreach Recommendations.

a. Several members of CORRC have provided meaningful input and recommendations for education and outreach. Items considered were:

- 1) An information and membership brochure.
- 2) A quarterly newsletter.
- 3) A directory of environmental education and training programs sponsored by CORRC partners and others.
- 4) Research/study progress reports.
- 5) Final research/study reports.

b. Education and Outreach Activity Recommendations are as follows:

1) Educational Activities.

- a) Sponsor data sharing seminars and workshops for CORRC members and other interested parties.
- b) Sponsor public seminars on study findings as they relate to priority issues.
- c) Produce project study reports for CORRC partners with companion media releases.

2) Outreach Activities.

a) Design and publish a CORRC information brochure with an appropriate membership application insert. Brochure contents could include CORRC background, framework for cooperation, the CORRC vision, priority issues and proposed activities, the future, and a list of participating and sustaining members. Funding for this item would come from membership dues or contributions by partners with "inhouse" capability. Project target date is December, 1993.

b) Design and publish a quarterly CORRC newsletter. Contents would include general information about CORRC activities, comments from the Board, upcoming meeting-conferences related to CORRC interests, abstracts of CORRC study project findings, activities and projects of CORRC partners, and biosphere reserve activities within the CORRC area. A membership insert could also be included with the

newsletter. Funding for this item would come from membership dues or contributions by partners with "inhouse" capability. Project target date is December, 1993.

4. Recommendations to Affiliate with Other Established or Emerging Programs.

a. Several other established or emerging programs exist within the Rocky Mountain Region and CORRC area. It is recommended that CORRC seek some sort of more formal "ties" or affiliation in January, 1994 with the following:

1) The Terrestrial Ecosystems Regional Research and Analysis Laboratory.

a) Mission: to be an open, collaborative laboratory; to develop and deliver tools and methodologies for the analysis of interactions among people, land and natural resources; and to benefit and improve land-resource decision making by facilitating use of the tools and methodologies.

b) Supporting agencies are the U.S. Departments of Agriculture and Interior.

2) The Human Dimensions in Natural Resources Research Unit.

a) Mission: To provide assistance in planning, management and administration of natural resources by conducting research; providing training and educational programs; and offering technical expertise which leads to increased understanding of human behavior as it relates to natural resources; to identify and/or develop specific means by which behavioral information can be utilized in a natural resources problem-solving or management framework; and to facilitate the transfer and application of research once it has been conducted.

b) Selected Research: Listed below is a selection of recent and current graduate student research conducted under the direction of participants in the Human Dimensions in Natural Resources Unit.

Bright, A.D. In progress. An assessment of attitudes toward public use of the Arapaho and Roosevelt National Forests and the Pawnee National Grasslands. Ph.D.

Cowdin, N.P. 1986. Giardia, water quality and the behavior of recreationists: an investigation in Rocky Mountain National Park. M.S.

Holmes, T. In progress. Effects of human disturbance on the ecology of diurnal grassland-nesting raptor communities. M.S.

Ruefenacht, B. In progress. The role of habitat corridors in facilitating survival and movement of vertebrates in fragmented landscapes. M.S.

Wells, M.D. In progress. The role of interpretation and education in mediating natural resource conflicts: a case study of livestock grazing on public lands. Ph.D.

c) Supporting agency is Colorado State University.

3) The Four Existing MAB Reserves within the CORRC area:

a) *CENTRAL PLAINS Biosphere Reserve:*

Administrative Site:	Central Plains Experimental Range
Administrating Entity:	U.S. Department of Agriculture, Agricultural Research Service
Location:	Colorado (Weld County)
Area (hectares):	6,210
Biogeographic Province:	Grasslands
Year Designated as BR:	1976

b) *FRASER Biosphere Reserve:*

Administrative Site:	Fraser Experimental Forest
Administrating Entity:	U.S. Department of Agriculture
Location:	Colorado (Larimer County)
Area (hectares):	9,328
Biogeographic Province:	Rocky Mountains
Year Designated as BR:	1976

c) *NIWOT RIDGE Biosphere Reserve:*

Administrative Site:	Niwot Ridge
Administrating Entity:	University of Colorado
Location:	Colorado (Boulder County)
Area (hectares):	1,200
Biogeographic Province:	Rocky Mountains
Year Designated as BR:	1979

d) *ROCKY MOUNTAIN Biosphere Reserve:*

Administrative Site:	Rocky Mountain National Park
Administrating Entity:	National Park Service
Location:	Colorado Boulder, Grand, Larimer Counties)
Area (hectares):	106,710

Biogeographic Province: Rocky Mountains
Year Designated as BR: 1976

e) The potential for cooperation between the Biosphere Reserves and CORRC includes the following:

- * Projects that are relevant to issues and concerns identified through the CORRC scoping process.
- * Education/technology transfer demonstrations regarding resource management.
- * Biosphere Reserves may serve as control sites for studies dealing with biodiversity and human influences.
- * Biosphere Reserves have in place longitudinal studies regarding climate and watershed management.

f) Examples of Biosphere Reserve Activities Related to CORRC Issues.

** The Fraser Biosphere Reserve, selected research:*

Crouch, Glenn L. 1987. Big game habitat research in subalpine forests in the Central Rocky Mountains. In: Management of Subalpine Forests: Building on 50 Years of Research. USDA Technical Report RM-149, 106-112. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Leaf, Charles F., and Robert R. Alexander. 1975. Simulating timber yields and hydrologic impacts resulting from timber harvest on subalpine watersheds. USDA Forest Service Research Paper RM-133, 20 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

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Whipple, Steven A., and Ralph L. Dix. 1979. Age structure and successional dynamics of a Colorado subalpine forest. *American Midland Naturalist* 102: 142-158.

* *Rocky Mountain Biosphere Reserve - Research projects- ongoing and long-term.*

<u>Researcher</u>	<u>Organization</u>	<u>Subject of Study</u>
Cooper, David	CO. School of Mines	Wetlands Restoration
Hess, Karl	Independent Researcher	Vegetative Cover Types of RMNP
Huckaby, Laurie	Colorado State Univ.	Fire Effects-High elevation Ecotones
Olmstead, Charles	Univ. of Northern CO.	Boundary Elk Study
Veblen, Thomas	Univ. of Colorado	Global CC - Disturbance Regimes

4) *The NPS Water Resources Cooperative Park Studies Unit.*

a) *Mission:* The WR-CPSU and Colorado State University, Watershed Research Studies Program is aimed at developing a hydrologically, geologically and ecologically sound program for collection of long-term baseline data on the state of park ecosystem health. The program is developing a network of representative long-term watershed research sites compatible with and complementary to other agency efforts. Quantification of the hydrologic cycle and chemical flux are major objectives of the NPS watershed program. Such measurements, when combined with other geographic resources data (e.g. geology, land-use, topography, historic and pre-historic records), permits a better understanding of ecosystem-level processes and of how park watershed-ecosystems respond to various natural and human-induced stimuli, and allows one to interpret environmental change as an early indicator of resources impairment for the improved management of NPS watersheds.

b) *Supporting agencies* are the National Park Service and Colorado State University.

c) *Long-term ecological research in Loch Vale Watershed, Rocky Mountain National Park.*

Baron, J. (Editor). 1992. Biogeochemistry of a Subalpine Ecosystem: Loch Vale Watershed. Springer-Verlag Ecological Studies Series 90, New York.

Clow, D.W. 1992. Field and laboratory studies of geochemical weathering rates of granites from a small Rocky Mountain watershed. Ph.D. Dissertation, University of Wyoming, Laramie.

5) **Wildfire Sub-committee of the Colorado Natural Hazards Mitigation Council.**

a) CORRC should maintain close liaison with the Wildfire Sub-committee in their effort to develop GIS/Wildfire application. The CORRC data cooperative includes common partners who are also signators of the CORRC MOU. The Wildfire Sub-committee has several proposals "on the table" to consider such items as "the development of a unified spatial database for wildfire management in areas under multiple jurisdictions".

6) **Liaison Activities.** CORRC should explore the potential for liaison with the NSF's Long Term Ecological Research, INSTAAR, the Sustainable Land Stewardship Network, and the University of Colorado Global Change Program.

7) **Affiliation with the U.S. Man and the Biosphere Program.** Consistent with the original intent for forming CORRC, it is recommended that CORRC seek formal affiliation with the U.S. Man and the Biosphere programs as a MAB cooperative. CORRC continues to assume that such affiliation may provide assistance in securing "other funding" and cementing partnerships to address issues within the CORRC area of concern

Section 5

CORRC AS A REGIONAL COOPERATIVE

Preceding sections clearly justify the formalization of CORRC as a regional cooperative and qualification for affiliation with the U.S. Man and the Biosphere Program. The final step in both actions however, must be supported by an organizational structure, administrative procedures and a modest budget to carry out CORRC purposes. Results from the feasibility study (specific questions) indicated that it was appropriate for CORRC to have an administrative board (Figure 11). In addition, there was a majority preference for increased size of partner representation, or guaranteed broad representation - hence increase in board members beyond size and representation of the current CORRC Steering Committee (Figure 12).

Obviously, when considering making a commitment (funding and in-kind contributions), a majority of existing and potential partners consider administrative guidelines desirable (Figure 13). It should be abundantly clear that such guidelines are essential to the integrity of CORRC, its participating entities and efficient use of limited resources.

A. Organizational Structure and Administrative Procedures Recommendations

Consistent with the proposed CORRC bylaws (Appendix F), developed by the CORRC administration working group, the most appropriate organizational structure for establishing and maintaining CORRC in the near future is shown in Figure 14. Excerpts from the bylaws that support the organizational structure and represent administrative procedures recommendations are:

1. Board of Directors: The initial Board shall consist of the positions listed below specified from the date of adoption of CORRC Bylaws through December 31, 1995. In the future, elections shall be held in accordance with Article VII, Section 1.b. Officers will serve for a full three years. The elected Board members will serve on a staggered basis as shown below. The first such election shall be held prior to December 31, 1995, for terms beginning January 1, 1996.

Chairperson	3 years
Vice Chairperson	2 years
Secretary	1 year
Treasure	3 years
3 Board Members	1 year
3 Board Members	2 years
3 Board Members	3 years

Fig. 11. Response to the appropriateness of a CORRC administrative board, 1992.

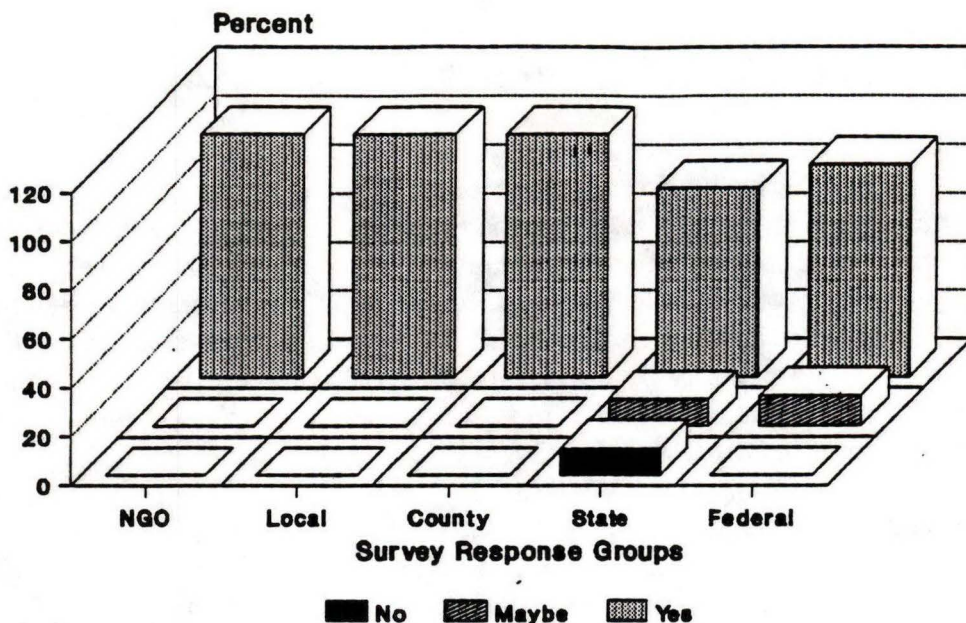
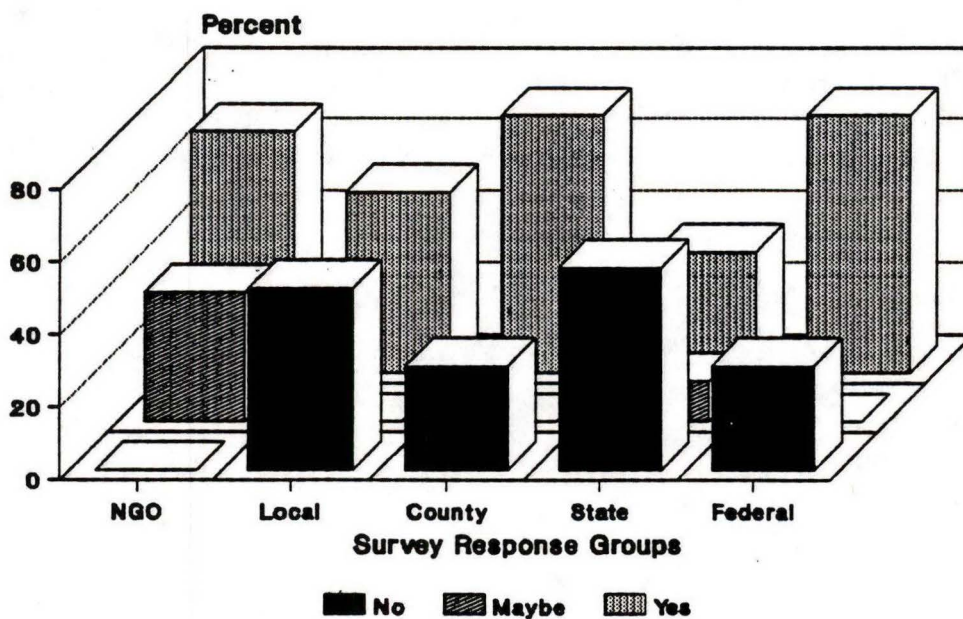
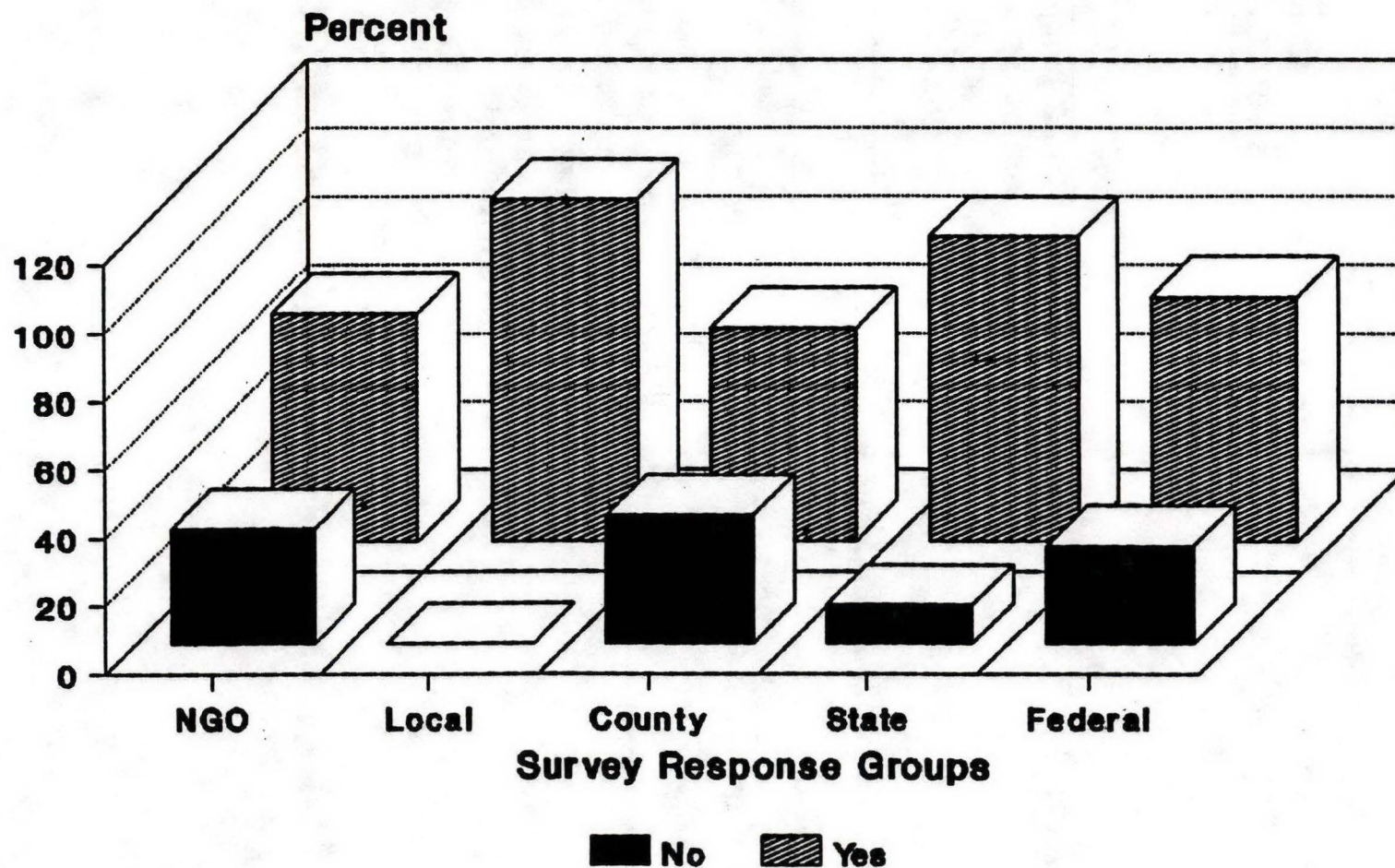


Fig. 12. Response to expanding the CORRC administrative board, 1992.



Expanding = size and representation.

**Fig. 13. Response to the desirability of
CORRC administrative guidelines, 1992.**



Guidelines - Bylaws.

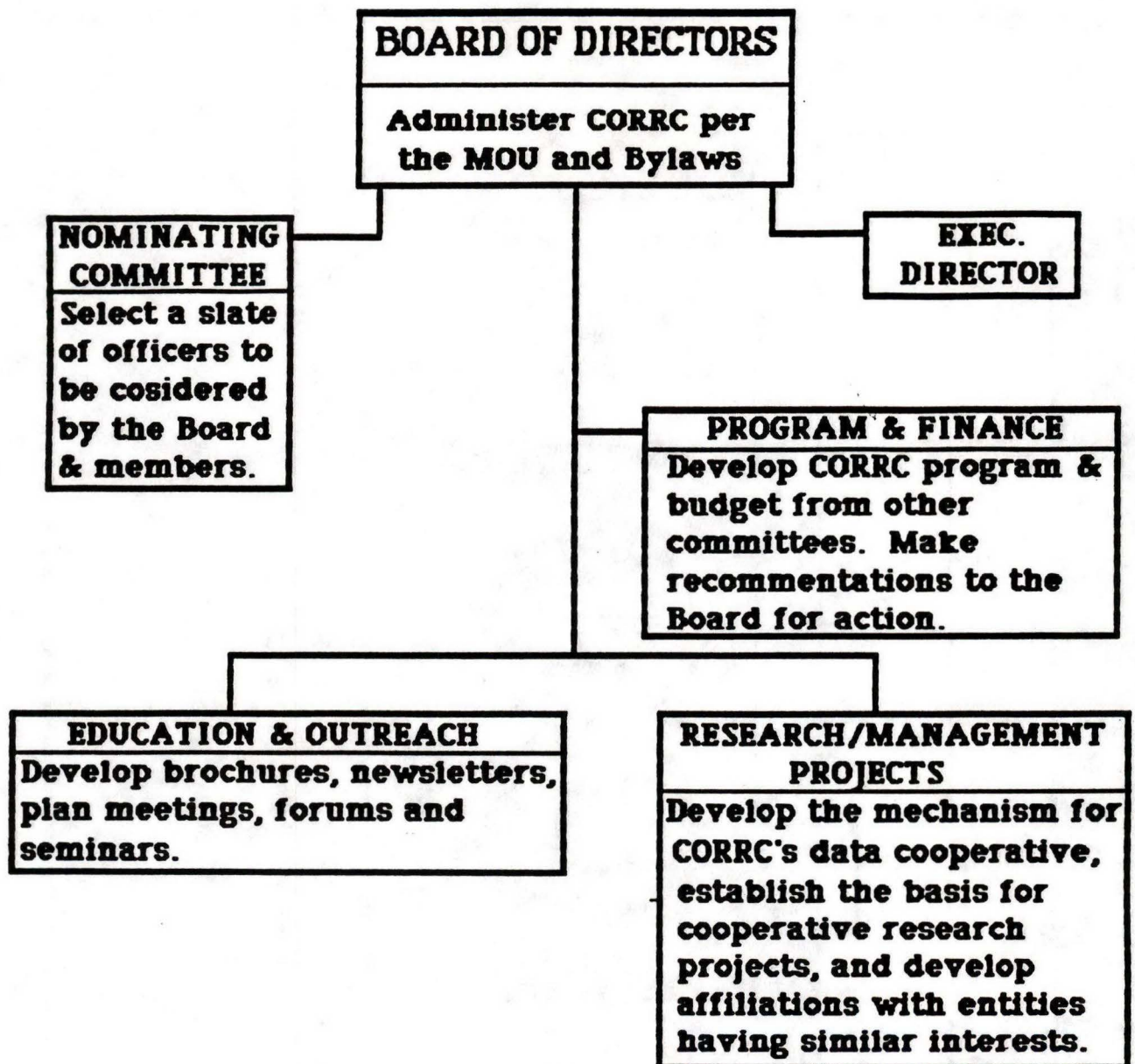


Fig. 14. CORRC ORGANIZATIONAL STRUCTURE, 1993.

2. **Nomination and Elections:** A nominating committee for election of offices shall consist of at least five members, selected with due consideration to representation from resource management agencies, 501(c) (3) non-profit organizations, and educational institutions, and shall be appointed by the Chairperson with approval from the Board. This committee shall make at least one nomination for each Board position. Nominees shall be selected from the **participating** members. Elections will be by mailed ballot prior to 31 December, on an annual basis beginning in 1995.

3. **Quarterly and Annual Meetings:** Quarterly meetings of the membership shall be held at a place to be determined from year to year by the Board. An annual meeting of the Board and membership shall be held at a place to be determined from year to year by the Board. This meeting will constitute one of the quarterly meetings.

4. **Duties, Powers and Committees:** The Board shall be responsible for the control and management of the affairs, property and interests of CORRC consistent with the MOU. The CORRC Chairperson may create and appoint committees to assist the Board in the conduct of CORRC affairs subject to approval by the Board.

a. **Chairperson.** At all meetings of the membership and Board, the Chairperson, or in that persons absence, the Vice Chairperson shall preside.

b. **Quorum.** At all meetings of the Board, a simple majority of the total member of same shall constitute a quorum for the transaction of the business.

5. **Removal.** Any officer or board member may be removed for cause at any time by the affirmative vote of 2/3rds of the entire membership present at any special meeting of the members called for this purpose, or at a quarterly or annual meeting of the members.

6. **Salary and Expenses.** No stated salary shall be paid to officers, board members, as such, for their services in the conducting of board business. Expenses incurred while conducting CORRC business may be reimbursed upon approval by the Board.

7. **Contracts.** CORRC may enter into contracts necessary to carry out its stated purposes articulated in the MOU and these Bylaws. Any board member, personally and individually, may be a party to or may be interested in any contract or transaction of CORRC, and one of these members shall be liable in any way by reason of such interest, provided that the fact of such interest be disclosed or made known to the Board, and provided that this group shall authorize, approve of ratify such contract or vote of the interested party). This Section shall not be construed to impair or invalidate or in any way affect any contract or transaction which would other wise be valid under the law.

8. Officers.

a. CORRC Officers. The officers of CORRC shall consist of a Chairperson, Vice Chairperson, Secretary, and Treasurer.

b. Chairperson. The Chairperson shall be the chief executive officer of CORRC and, subject to the direction of the Board, shall have general responsibility for the business of the Board.

c. Vice Chairperson. During the absence or disability of the Chairperson, the Vice Chairperson shall have all the powers of and be subject to all the restrictions upon the Chairperson. The Vice Chairperson is responsible for conducting board elections.

If the office of the Chairperson becomes vacant, the Vice Chair person shall succeed to office for the balance of the term. In such event, there will be written notice to the membership.

d. Secretary. In general, perform all duties incident to the office of Secretary and such other duties assigned by the Chairperson of the Board.

Specific responsibilities include recording all proceedings of meetings, causing all notices to be duly given, be the custodian of CORRC records, maintain a list of CORRC members, and insure that all records are properly kept and filed.

e. Treasurer. In general, perform all duties incident to the office of Treasurer and such other duties assigned by the Chairperson of the Board.

Specific duties include having charge of and being responsible for all CORRC financial assets, deposit CORRC moneys in appropriate banks or trusts as directed by the Board, receive and disburse funds as authorized, keep an account of all the officers, Board and membership periodic statements on CORRC's fiscal well being.

9. Committees.

a. Appointment. The Chairperson with approval from the Board shall have the authority to appoint and discharge standing and adhoc committees necessary to conduct the business of CORRC. Each committee will elect its own chair.

b. Term of Office. The term of office for all standing committees shall be for three years, adhoc committees for a designated time based upon the committee charge.

c. Education and Outreach Committee. This committee will include the Vice Chairperson, three members of the Board, three members from the general membership, the chair of the Research/Management Project Committee and the Executive Director. Duties include soliciting, reviewing and making recommendations to the Board regarding the range of educational and outreach activities to carry out the purposes of CORRC. This committee shall also serve as a facilitator to develop publications and educational programs.

d. Research/Management Project Committee. This committee will include the Chairperson, three members of the Board, three members from the general membership, the chair of the Education and Outreach Committee and the Executive Director. Duties include soliciting cooperative activity and research project ideas within the CORRC area that address priority issues, reviewing and prioritizing projects consistent with CORRC purposes and member resources, make recommendations to the Board on projects to be undertaken, and facilitating projects and monitoring their successful completion.

e. Program and Finance Committee. This committee will be composed of the Officers, Board, committee chairs and the Executive Director. Duties include assimilating input from short and long range programs, develop annual program plans, budgets and implementation strategy. This committee will present its findings to the full membership.

10. Employees.

a. Executive Director. There may be paid administrative support to directly assist the Officers and the Board in conducting the daily and special business of CORRC. This person will have not have a vote on the Board.

Additional responsibilities may include preparing and submitting funding proposals, monitoring research contracts; supervising quarterly and annual meeting logistics; producing quarterly newsletters, research publications, project reports, brochures; assisting appointed committees in completing their task; maintaining liaison with other organizations having similar or related purposes; and securing tax exempt status (501-C-3) as well as complete other documentation necessary to formalizing partnerships. With direction from the Officers and the Board, develop an annual work plan to effectively accomplish support responsibilities.

b. Salary. The salary or other compensation of the Executive Director shall be fixed from time to time by the Officers and Board.

c. Sureties and Bonds. In case the Officers and Board shall so require, any agent of CORRC shall execute to CORRC a bond in such sum and with such sureties as the Officers and Board may direct, conditional upon the faithful performance of duties for CORRC, including responsibility for negligence and or the accounting for all property, funds or assets of CORRC which may come into his or her hands.

11. General Prohibitions: CORRC shall be operated exclusively for the educational purposes set forth in Article II of the bylaws.

a. No part of the assets of CORRC under any circumstance shall inure to the benefit of any individual.

b. No part of the activities of CORRC shall consist of an intervention on the policies, programs, and policy making authority of any class of CORRC members.

c. No part of the activities of CORRC shall consist of carrying on propaganda or attempting to influence legislation.

d. CORRC shall not participate in, nor intervene in any political campaign on behalf of any candidate for public office.

e. CORRC shall not be organized or operated for profit.

f. CORRC shall not:

1) Lend any of its income or assets without the receipt of adequate security or reasonable rate of interest to;

2) Pay any compensation, in excess of a reasonable allowance for salaries or personal services actually rendered to;

3) Make any part of its services available on a preferential basis to;

4) Make any purchase or securities or other property for more than adequate consideration in money, money's worth from;

5) Sell any securities or other property for less than adequate consideration in money or money's worth to; or

6) Engage in any other transactions which result in substantial diversion of its assets to;

any officer, member, board member, agent of CORRC, or any substantial contributor to CORRC.

For details on such items as fiscal year membership, dues, manner of action, indemnity and amendments to the bylaws, please refer to Appendix F.

B. Budget Recommendations:

One of the "thorny issues" for CORRC administration is employing an Executive Director with an operating budget. This item has been discussed by partners to the MOU and with MAB officials. Their view is that an administrator responsible to the Board of Directors with duties as outlined on page 44 of this section is essential if CORRC is to be a viable cooperative. The recommended organizational structure reflects this view. Obviously this position requires a salary and modest operating budget.

The budget recommendation (annual) for a 1/2 time executive director is:

<u>1. Item</u>	<u>Unit</u>	<u>Total</u>
a. Salary:	\$1,500/mo.	\$18,000
b. Publications (brochure, quarterly news letter)		\$1,500
c. Office Rental (provided by a CORRC member)		- 0 -
d. Office Costs (Telephone, typing, supplies mailing)		\$3,250
e. Travel	900 mi/mo. @ .20/mi	<u>\$2,250</u>
		\$25,000

The budget would be met from revenues generated by membership dues established by the Board of Directors or monetary contributions from MOU cooperators.

2. **Membership classes** (defined in the Bylaws) would contribute to meeting budget requirements. These are:

a. **Participating Members:** comprised of governmental agencies, 501(c)(3) organizations, and educational institutions, interested in promoting the purposes of CORRC through monetary or in-kind contributions.

b. **Sustaining Members:** comprised of individuals interested in promoting the purposes of CORRC through monetary or in-kind contributions.

c. **Corresponding Members:** comprised of interested agencies, organizations, educational institutions, representatives of the private sector and individuals interested in promoting the purposes of CORRC.

d. **Student Members:** comprised of active full-time students at high schools, colleges and universities who are interested in promoting the purposes of CORRC.

3. In Kind Contributions - In the context of "in kind" contributions", it is reasonable to assume that each of the following items could qualify for one participating membership.

a. Financial management, accounting and annual audits.

b. Office space.

c. Office support.

d. Publications support - Printing and mailing.

e. Transportation - a vehicle (?).

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APPENDIX A.

12 November 1990

COLORADO ROCKIES BIOSPHERE COOPERATIVE PROGRAM VISION STATEMENT

1. Purpose

The Colorado Rockies Biosphere Cooperative (CORBC) Program is being planned to further the goal of the U.S. Man and the Biosphere Program to strengthen the scientific, educational, demonstration, and networking functions of Biosphere Reserves in the United States. The objective of the CORBC Program is to create and develop means of cooperation among public and private organizations involved in research, education, and resource management in north-central Colorado on both sides of the Continental Divide. Such cooperation will promote knowledge and understanding of the natural and human resources of this region, to encourage wise use of these resources through research; information sharing; data base development, integration, and updating; cooperative planning; education; and the demonstration of principles of ecosystem management and environmentally and socially sound development.

The lands included within the CORBC Program will serve as an example of how natural processes and animal and plant species can be sustained in a region containing unmanaged and managed ecosystems, residential developments, recreational uses of many types, and urban areas. The CORBC Program recognizes that humans are part of the biosphere and that cooperation between regional organizations and institutions is vital to sustain both natural processes and the conditions for human settlement and other activities.

In the near future, a feasibility assessment will be conducted to: specify the cooperating organizations and institutions and their responsibilities; clarify the purposes and scope of the program; and delineate the boundaries of the region.

2. Background

In 1976, the Man and the Biosphere (MAB) Program of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) designated Rocky Mountain National Park (National Park Service) and Fraser Experimental Forest (USDA Forest Service) as units of the International Network of Biosphere Reserves. In 1979, UNESCO designated Niwot Ridge as a Biosphere Reserve. While a primary objective of these designations was to foster cooperation between the agencies responsible for these areas, such cooperation has been limited. One reason is that these reserves are not contiguous.

From November 1989 to November 1990, representatives of resource management and research agencies and institutions (see appendix) held six meetings to discuss approaches to using the existence of the three Biosphere Reserves as a stimulus toward cooperative research, education, and resource management in north-central Colorado. The region identified in these meetings includes the area from Rocky Mountain National Park to southern Boulder and Grand Counties, and from the valleys of the Upper Colorado and its tributaries to eastern Boulder and Larimer Counties.

Within the CORBC region, the federal government is the major landowner (USDA Forest Service: Arapaho-Roosevelt National Forest; National Park Service: Rocky Mountain National Park). East of the Continental Divide, considerable areas of land within Boulder and Larimer Counties are in municipal or county ownership. The remainder of the region is in private ownership, including many small parcels interspersed with National Forest land and within Rocky Mountain National Park, and urban and agricultural land both east of the foothills and in the Upper Colorado and Fraser River valleys in Grand County.

According to the principles of the U.S. Man and the Biosphere Program, the CORBC region would be divided into three zones. The protected "core areas," in which natural processes are dominant, would be Rocky Mountain National Park and the City of Boulder watershed. Surrounding these would be the "zone of

managed use." This zone would primarily include lands within the Arapaho-Roosevelt National Forest, and also lands under the management of the State of Colorado and private organizations. The rest of the region would be a "zone of cooperation," including the remaining lands in private, municipal, and County ownership. Some of this land, in both County and municipal ownership, is protected as open space, parks, and watershed with limited uses under a range of agreements.

Additional core areas, particularly of foothills and grasslands habitat, could be included as part of the CORBC region, so that it would have a range of core areas representing the full diversity of regional ecosystems. While this would not be a function of the cooperative, such areas could be protected through land acquisition by Counties or municipalities or through appropriate land management practices or agreements.

3. Regional issues

The CORBC region is characterized by high relief, with altitudes from about 4,900' to 14,255'. This high relief is a major determinant of a great variety of natural and human-influenced ecosystems, further reflected by a very high diversity of animal and plant species. Overlain on these natural resources is a complex land ownership in the zones of managed use and cooperation. In this highly diverse residential/wildland interface, the rapid expansion of urban developments and recreational demands are critical issues. These issues result in increasing needs for cooperative research, information sharing, planning, and management in relation to wildlife, forests, grasslands, air, and water: resources which must be considered on a regional basis, across legal boundaries.

Throughout the CORBC region, the assessment and sustenance of biodiversity and ecological processes are critical needs. Critical wildlife issues in the mountains and foothills relate particularly to mammals with large ranges, such as mountain lion, black bear, and elk and other ungulates. The use and management of forests and grasslands is especially critical in the foothills

of the Front Range, where there is extensive and increasing development in these fire-dependent ecosystems under a highly complex mosaic of private and public ownership. The forests are susceptible to infestations of insects, which further exacerbate the likelihood of forest fires and consequent loss of property. Forests are also the location of increasing recreational use in all seasons. On the plains, there are significant opportunities for the protection and restoration of native grassland as well as the reintroduction of wildlife species, such as sharp-tailed grouse. Over the long term, approaches to the management of wildlife and livestock, forests and grasslands, air, and water may have to be reconsidered in response to potential changes in climate. Again, such activities will have to be regional, requiring cooperation and coordination between involved agencies.

4. Organization

A central objective of the CORBC Program is to create and develop means of cooperation among organizations involved in research, education, and resource management. These organizations include federal, state, county, and city agencies; educational institutions; and private organizations. To date, the CORBC Program has developed informally, through limited support in the form of staff time and resources from cooperating agencies and educational institutions. In the near future, a more formal organization will be established, with a coordinating committee composed of representatives from cooperating organizations. This committee's first function will be to implement the feasibility assessment of the CORBC Program required for approval by the U.S. MAB Biosphere Reserve Coordinating Committee.

The CORBC coordinating committee will not have any jurisdictional or decision-making authority; it will function in an evaluation and technical support capacity for its participants and the region. In addition to the coordinating committee, it is anticipated that the CORBC Program will shortly include a full- or part-time coordinator: either an employee of one of the cooperating organizations or an individual employed by the CORBC

Program via financial or other support from cooperating organizations. The coordinator will work out of a CORBC Program Office and ensure regular communication both between cooperating organizations and with educators and other interested parties in the region.

5. Cooperative activities

The activities of the CORBC Program will begin in a small way and develop as the needs of cooperating organizations indicate. Organizations within the CORBC region have devoted considerable resources to accumulating information necessary to address the regional issues described above. However, representatives of resource management and research agencies and institutions, meeting in June and August 1990, agreed that there has been little coordination in creating, developing, and updating the resulting data bases. An initial activity of the CORBC Program, being explored by the City of Boulder, is to inventory existing sources of information and to assess available hardware and software. This is a first step to identifying needs for future cooperation in research, data integration, resource planning and management, and education.

This inventory and assessment will form the basis of a demonstration project considering the residential/wildland interface, focussing on issues such as fire, recreation, and wildlife. This project is initially being organized by the U.S. Forest Service and the National Park Service, with involvement from counties and municipalities within the CORBC region. In the longer term, these activities will lead to greater positive interaction between organizations and publics within the region, with the resulting information being used in education (both public and within cooperating organizations) and policy-making. Potential benefits will relate to the identification of possible policies for populations and resources within the region; the assessment of the impacts of these various alternatives; and the resolution or mitigation of conflicting interests.

6. Future Vision

With its great diversity of natural and human-influenced ecosystems ranging from the grasslands to alpine peaks, the CORBC region includes nationally- and internationally- recognized recreational, wilderness, scenery, wildlife, and water resources. The region is characterized by a unique and complex mosaic of land ownership, including intermixed private residential land and public wildlands. It includes, or is adjacent to, the Cache La Poudre Wild and Scenic River, Rocky Mountain National Park, the Arapaho National Recreation Area, and several Wildernesses. These and other public lands have good access from an extensive road and trail network, and serve the interests of people who draw their livelihood from this land, live nearby, and visit from around the nation and the world.

A few decades into the future, visitors and residents will find a landscape that is managed in a coordinated way. Within this landscape, natural processes will operate with limited hindrance, even though settlements and transportation and communication networks greatly modify portions of the region. Land ownership remains a mixture of private and public land. Buildings and infrastructure are constructed to be resistant to natural occurrences of fire and flood. Transportation networks are designed to minimize impacts on wildlife movements and visual, water, and air quality. Forests are a mosaic of natural successional communities and actively managed stands. Native grasslands provide a glimpse of how the plains once looked. Streams and rivers flow with limited impoundments or diversions and are bordered by riparian zones that provide habitat and corridors for wildlife movement. Wildlife populations fluctuate according to natural cycles and move freely. Biological communities have a full complement of native plant and animal species. Recreational activities lead to an appreciation of nature and ecosystem integrity with experiences that match the setting in all seasons. Fire continues to be a significant natural force, and occurs with minimal loss of structures or property. Management and coordination of use between federal,

APPENDIX B.

MEMORANDUM OF UNDERSTANDING between

**Colorado State University
University of Colorado
City of Boulder, Colorado
City of Ft. Collins, Colorado
Boulder County, Colorado
Larimer County, Colorado
Colorado State Forest Service
Colorado Division of Wildlife
US Geological Survey, US Department of Interior
National Park Service, US Department of Interior
and
US Forest Service, US Department of Agriculture**

To enhance North Central Colorado's mountain, forest, grassland, and community values; to promote research needs, research applications, education, demonstration, and economic development with ecosystem principles; and to expand public service; the above parties jointly enter into this Colorado Rockies Regional Cooperative (CORRC) Memorandum of Understanding (MOU). This MOU defines the intent to cooperate and facilitates subsequent agreements among the participants.

Benefits of CORRC include sharing information, improved coordination, cooperative research, and furthering education on issues of mutual concern. The CORRC area includes lands with no development to lands with residential, agricultural, and urban developments. This range of development will facilitate it being a model of cooperation and coordination on public and private lands intermingled between rural, residential, and urban settlements.

Recognizing people are a part of the ecosystem, the CORRC has an additional goal to determine the local interest and feasibility of the area becoming a part of the international Man and the Biosphere program.

The parties hereto agree on the need for land use coordination; sharing of information; and coordinated research. The goal of the CORRC is to capitalize on the differences in missions and authorities between agencies to achieve in combination a higher level of service than could be obtained separately. The parties agree to:

- Improve cooperation among adjacent landowners and Federal, State, and local governments to benefit management of intermingled lands in the residential/ wildland interface.
- Encourage cooperative projects and studies to achieve common goals.
- Increase application of scientific knowledge and understanding of ecosystems, human values, and resource options for community needs.
- Encourage interagency participation in shared natural resource issues when planning and implementing programs and projects.

- Strengthen cooperative planning efforts to ensure that cumulative effects of activities are considered.
- Operate within a broadened concept of sustainable resources.
- Enhance recreation, wildlife, fisheries, soil, and water resource management programs.
- Expand multi-resource extension services to private landowners, local residents, and urban/wildland interface managers.
- Improve inventories of all resources and cooperate on forest inventories of Federal, State, and private lands.
- Develop and implement techniques to improve compatibility of databases and information systems.
- Share useful knowledge to help other regions and nations advance the science and practice of forest resource management.
- Identify joint research needs and demonstrate application of research knowledge that meet common goals.
- Promote education that fosters a resource ethic on the interdependence of humans and nature.
- Take a leadership role in land use and mitigation technologies for forests and rangelands.
- Recognize rural development needs where local communities are dependent.
- Increase support for programs that help diversify rural economies.

The parties agree that progress on items identified in this memorandum will be subjects included in the annual meetings of participants. Other issues or new items may be added as a result of the meeting.

Parties to this Memorandum of Understanding intend to benefit in proportion to the time, energy, and information they contribute. Any exchange of funds will be handled through subsequent funding agreements.

Each party reserves the right to determine which information will be made available to other members. Such information may be shared upon joint agreement of the parties involved. Proprietary and sensitivity restrictions on sharing information are recognized and no information having such restrictions will be shared unless in conformance. Parties will cooperate on methods to obtain information for mutual benefit at least cost.

Nothing in this Memorandum of Understanding shall require the expenditure of funds in excess of appropriations authorized by law or determined by the normal budgetary process of the Parties.

This Memorandum shall be implemented in accordance with applicable local, State, and Federal laws and regulations of the parties.

This Memorandum will not infringe on any party's legal, managerial, research, or educational authorities.

This Memorandum will become effective among parties as soon as it is signed and continue in full force and effect through December 31, 1997. Any party may terminate its participation after 60 days notice in writing to the others.

During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex, or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex, or national origin.

No member or delegate of Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

Participants to the above Memorandum of Understanding as of the date shown below:

Colorado State University
Forestry and Natural Resources




Dean College

4/1/92


Date

University of Colorado



Date

City of Boulder

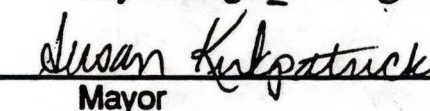


City Manager

4/1/92

Date

City of Fort Collins



Mayor

4/30/92

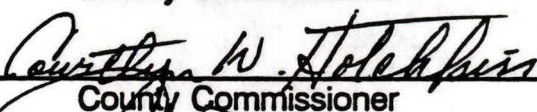
Date

Boulder County

County Commissioner

Date

Larimer County




County Commissioner

4-13-92

Date

State of Colorado
Division of Wildlife



Director

5-29-92

Date

Colorado State Forest Service

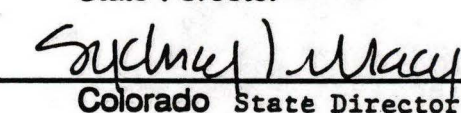


State Forester

4-28-92

Date

The Nature Conservancy

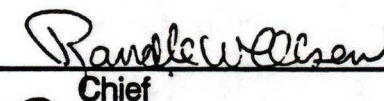


Colorado State Director

4-6-92

Date

USDI Geological Survey
Rocky Mountain Mapping Center



Chief

10/2/92

Date

USDI National Park Service
Rocky Mountain National Park



Superintendent

5/8/92

Date

USDA Forest Service
Rocky Mountain Forest and
Range Experiment Station



Director

4 Mar 92

Date

USDA Forest Service
Arapaho and Roosevelt
National Forests




Forest Supervisor

2/24/92

Date


USDI Fish and Wildlife Service
National Ecology Research Center



Director

5/21/92

Date

Approved as to Legal Sufficiency
Office of University Counsel
By  Date July 8, 1992

FEASIBILITY ASSESSMENT STUDY PLAN FORACOLORADO ROCKIES REGIONAL COOPERATIVE PROGRAM1. Introduction

The Colorado front range and in particular the proposed Colorado Rockies Regional Cooperative Program (CORRC) region (Figure 1) has been an area of significant change over the last fifteen years. This change has resulted in a highly diverse urban/wildland interface, significant conversion of prime agricultural lands, ever increasing recreational use pressures, loss of riparian and other wildlife habitat, and limited water resources being coveted by a variety of water users within and adjacent to the CORRC region. The fact that these "dynamics" or changes are occurring on both sides of the Continental Divide at a rapid rate, dictates that the region identify and address problems and opportunities as soon as possible.

From November 1989 through November 1990, representatives of resource management and research agencies and institutions (see Appendix A) held six meetings to discuss approaches to using the existence of the three Biosphere Reserves as a stimulus toward cooperative research, education and resource management in north-central Colorado. While recognizing the significance of the three reserves (Fraser Experimental Forest, Rocky Mountain National Park and the Niwot Ridge Biosphere Reserve) as an integral part of a CORRC program, it was decided a regional approach was essential in addressing changes that impact biodiversity, ecological processes, economic conditions and the social landscape. Given the composition and interdependency of diverse landscapes within the region, the obvious and relevant approach is the CORRC program. Consistent with the U.S. Man and the Biosphere Program, the CORRC region would be divided into three zones. The protected "core area" in which natural processes are dominant, would be Rocky Mountain National Park, existing wilderness areas within the Arapaho-Roosevelt National Forest and the City of Boulder watershed. Surrounding these would be the "zone of managed use". This zone would include lands within but not limited to the Arapaho-Roosevelt N.F., Colorado State Forest, Lory State Park and other lands under the management of private organizations such as the Nature Conservancy. The rest of the region would be the "zone of cooperation". This zone would include remaining lands in private, municipal, university and County ownership. Some of the lands in the zone of cooperation are already being protected as open space, parks, urban wildlife habitat, and for environmental education activities under a range of agreements.

2. Related Activities

Given the interest of several of the participants in moving ahead with a CORRC program, six of the participants have entered in to an agreement and are undertaking a demonstration data cooperative. The data cooperative area, within the proposed CORRC region boundaries, includes a portion of Rocky Mountain National Park, the Arapaho-Roosevelt N.F., and a portion of Boulder County mountain areas. The objective of the data sharing is to test the potential for utilizing joint information to address some of the following issues:

- a. fire management and suppression coordination,
- b. wildlife habitat condition and species migration,
- c. right-of-way and transportation management as it relates to public access and use of resources, and
- d. development and special uses related to the urban/wildland interface.

Data cooperative participants are Colorado State University, Rocky Mountain National Park, Arapaho-Roosevelt N.F., Boulder County, Colorado Division of Wildlife and the U.S. Geological Survey. GIS technology is being utilized to link, store and retrieve data. At the end of 18 months, the demonstration will be evaluated to determine if the data cooperative should be expanded or terminated.

The City of Ft. Collins, Larimer County, Colorado State University and the Northern Colorado Water Conservancy District recently participated in joint funding of a "findings of significance" study conducted by the National Park Service to address a proposed National Heritage Area encompassing the Poudre River basin. The theme of the National Heritage Area (NHA) is "the development and management of water in the westward expansion of the U.S.". The basin is within the CORRC region. The results of the NPS study verified that the Poudre River basin meets national significance criteria for the theme. Senator Hank Brown and the community have worked closely in drafting NHA legislation that was first introduced in early summer of 1991.

A "Steering Committee" of listed participants has been meeting on a regular basis. This group scheduled a meeting on October 8th, 1991 to bring other parties to the "CORRC table". This included water users, agriculture, surface mining, private corporations, public utilities and small business interests that are stimulating change within the CORRC region. The intent of this meeting was to present cooperative program opportunities, discuss "other party" involvement and cooperation, and work on the identification of regional issues and concerns. It is anticipated that all parties at this meeting will cooperate in some form in conducting the feasibility study.

3. Procedures

The feasibility assessment will consist of six basic elements (consistent with U.S. Man and the Biosphere guidelines). These are:

- a. Description and delineation of the biogeographical region. This would include "fine tuning" regional boundaries and the three zones to insure cohesiveness in terms of natural features, ecosystems and human cultural traditions. In addition, it is intended to be readily distinguishable in terms of physiography, ecological communities/life zones, and political boundaries.
- b. Identification of priority issues of regional concern. Environmental, land use, and socio-economic issues of greatest concern will be determined and documented by/ within each of the three zones. Input will be generated from representatives of public agencies and institutions, the private sector and the general public. This will be accomplished via surveys and workshops.
- c. Determination of interest in formalizing CORRC and future affiliation with MAB. This will be a continuation of the effort already undertaken to develop the CORRC vision statement. Discussion to date has resulted in the formation of a Core/Steering Committee to initiate and review project proposals, set agendas and call meetings regarding CORRC activities, and working with a PI to address items such as a. and b. above. A chairperson has been designated to work with the Steering Committee to carry out its tasks. Further interviews and meetings will be conducted to formalize/establish a framework for cooperation in developing and sharing information consistent with the CORRC goals and objectives.
- d. Identify an administrative mechanism. This will identify the appropriate mechanism for developing the cooperative program.
- e. Identify a program that addresses items per a. above. This element will provide a program that addresses priority regional issues per a. above. Organization, support elements, research and educational activities, and information dissemination activities will also be identified.

- f. A person, project coordinator (PC) will be responsible for conducting the feasibility study and preparing a report.

4. Personnel

Three persons are needed to conduct the preliminary feasibility study. These are the PC, Dr. Howard R. Alden (see Appendix B, Resume); two Graduate Research Assistants; and a part time secretary.

5. Participation

Participants in the sense of providing formal approval/support and potential resources include the U.S. Forest Service, the National Park Service, Boulder County, City of Boulder, U.S. Geological Survey, Colorado Division of Wildlife and Colorado State University. These parties along with the City of Fort Collins, Larimer County, the Northern Colorado Water Conservancy District, Colorado State Forest Service, the University of Colorado, Colorado Division of Parks and Outdoor Recreation and the Nature Conservancy are currently being approached to contribute funding and "in kind" resources so the CORRC can complete the feasibility study. The content of this proposal has already been reviewed and approved by the Steering Committee.

6. Budget

The following budget represents the estimated amount necessary to complete the CORRC feasibility study.

a. Amount: \$20,000.00

b. Distribution:

1) Project Coord.	\$4,000.00
2) Grad. Research Asst.	\$7,200.00
3) Secretary, part time	\$2,500.00
4) Computer, materials	\$1,500.00
5) Travel, Admin., Reports	\$2,800.00
6) Overhead (%10, The Nature Conservancy)	<u>\$2,000.00</u>
	\$20,000.00

****Note:** The feasibility study budget is subject to change by review and approval of the Steering Committee. The Nature Conservancy will, in addition to being a member of the Steering Committee, serve as the "banker" for this project. Individual/agency contributors will execute the appropriate documents with The Nature Conservancy to insure monies are available to complete the study.

7. Time Frame

- a. Project Initiation: (Feb. 1 - 29)**
 - 1) Selection of Graduate Assistants (GA).
 - 2) Orientation of GA's to project, establish task responsibilities.
- b. Formulate feasibility survey instruments: (Mar. 1 - 31)**
 - 1) Review similar instruments from SAMAB and other MAB cooperatives.
 - 2) "Construct" preliminary CORRC feasibility survey instruments.
 - 3) Pretest survey instruments (use Steering Committee for pretest).
- c. Conduct feasibility surveys: (April 1 - May 31)**
 - 1) Issues and concerns.
 - 2) CORRC organization, administration, operating procedures, basis for cooperation.
- d. Survey followup reference non-response: (June 1 - 30)**
- e. Assemble and evaluate feasibility survey results: (May 1 - June 30)**
 - 1) Issues and concerns.
 - 2) Priorities for further cooperation (education, data sharing, research, information dissemination).
 - 3) CORRC organization, administration, operating procedures.
 - 4) Recommendations for establishing CORRC as an official entity, and, if appropriate, seek affiliation with the MAB cooperative program.
- f. Prepare a draft report and executive summary from Item e. inputs for steering committee's consideration and disposition. (July 1 - Aug 8)**
- g. Distribute draft report to members of Steering Committee for their consideration and in preparation for 9/18/92 meeting in Boulder. (Aug 31)**
- h. Prepare a "copy ready" finished report for dissemination to cooperators, MOU participants, MAB and other interested parties. (Sept 28 - Nov 28)**

****Note:** There may be some adjustments to the timeline if the project monies are not in place by the end of Feb. 1992.

8. End Product

The end product will be a report that identifies and describes pertinent information relevant to the six basic elements briefly outlined under **2. Procedures**. In addition, it will provide a set of guidelines for formalizing CORRC, its operating procedures and future opportunities of cooperating in educational, research, and information sharing and dissemination. Documents and other sources used to identify priority issues and concerns in the feasibility study will be cataloged in an appendices.

9. Contact Person

Dr. Howard R. Alden, Professor
College of Forestry and Natural Resources
Department of Recreation Resources & Landscape Architecture
Colorado State University
Ft. Collins, Colorado 80523
(303) 491-7487 FAX: (303) 491-2255

June, 1992

COLORADO ROCKIES REGIONAL COOPERATIVE **FEASIBILITY STUDY**

The objectives of the Colorado Rockies Regional Cooperative (CORRC) feasibility study are to:

1. identify high priority issues dealing with biological diversity, resource management and human influences needing attention within the CORRC study area;
2. determine how issues might be addressed through education, research and information sharing partnerships;
3. determine how partnerships might be configured and the extent of cooperation possible; and
4. establish the basis for affiliation with the U.S. Man and the Biosphere Program (MAB) as a regional cooperative.

The study will focus on issues associated with *biodiversity*, *resource management* and the *human-wildland interface* within the three zones located in the CORRC study or cooperative area boundary. The three zones (consistent with MAB terminology) are the *core zone*, land areas where natural processes are dominant; the *management zone*, land areas where natural processes and human influences are codominant or interact; and the *cooperation zone*, lands where human influences are dominant. The CORRC study area and general delineation of zones represents a frame of reference to allow study participants to better identify and prioritize issues by geographic location (See attached map). The study includes your prioritization of issues that need addressing, your interest in participating in future cooperative (education, research and information sharing) efforts, and the "form" of cooperative efforts most appropriate for you, your agency.

Definitions key to the study are:

- * ***Biodiversity***- has two components: (1) plants and animals (bio), and (2) their richness, the number and diversity of individual species of plants and animals or in combination as ecosystems in a geographic location.
- * ***Resource Management***-providing supervised and selective stewardship for the maintenance, protection and sustained use of timber, mineral, wildlife, water and recreational resources for future generations.
- * ***Human-Wildland Interface*** - where human activities and influences physically meet, integrate and may modify naturally occurring plants, animals and ecosystems.

There are also several questions dealing with your interest in CORRC and its future potential.

Issue Identification & Prioritization

1. For each of the three zones shown on the attached map (Core, Management and Cooperation) please list and prioritize three or more issues related to biodiversity, resource management, and the human - wildland interface that you feel should be addressed through education and research projects in the next five years. If you feel there are no relevant or urgent issues in any of the three zones, leave the spaces blank. If you would like to make additional comments, please use the last page.

A. Core Zone - Land areas where natural processes are dominant.

Issues	Priority Rating		
	High	Mod	Low
<u>Example:</u> Ability of zone habitat to support rare and endangered species.		x	
1.			
2.			
3.			
4.			

B. Management Zone - Land areas where natural processes and human influences are codominant or interact.

Issues	High	Mod	Low
<u>Example:</u> Ability of zone to sustain increased numbers of recreation visitors.	x		
1.			
2.			
3.			
4.			

c. Cooperation Zone - Land areas where human influences are dominant.

Issues		Priority Rating		
		High	Mod	Low
<u>Example:</u> Current/potential loss of riparian and wetland habitat in urban areas		x		
1.				
2.				
3.				
4.				

2. Please list at least one highest priority issue from your responses on question one that you/your agency would consider developing into a cooperative education, research or information sharing project with CORRC partners.

a. Core Zone

1. _____
2. _____

b. Management Zone

1. _____
2. _____

c. Cooperation Zone

1. _____
2. _____

General Questions

3. Based upon the CORRC overview plus responding to this study survey, do you feel that CORRC has the potential to play a creative and significant educational and research role regarding environmental and resource management issues?

Comments: _____

4. Given that CORRC may be interested in developing a cooperative education, research or information sharing project, please indicate the types of cooperation you/your agency feel are appropriate.

- a. Sponsor joint projects _____
- b. Information sharing _____
- c. Use CORRC as an information repository _____
- d. Joint education, research publications _____
- e. Joint sponsor of public information forums on key resource issues _____
- f. Other _____
- g. Other _____

5. Do you feel CORRC could be a model for or has the potential to play an educational, research and information sharing role on a regional, national or international level.

Comments: _____

6. If you/your agency is interested in being a partner in CORRC, please provide the name and address of a contact person and go to **Part II** of this survey.

PART II

Please recognize that to establish and maintain an effective cooperative effort requires both an appropriate *administrative mechanism* and *modest resources*. To date, CORRC's "administrative mechanism" has been a *steering committee* with a chair person and recording secretary selected from the following:

- * Federal Agencies (2) - U.S. Forest Service
U.S. Geological Survey
- * State Agencies (1) - Colorado Division of Wildlife
- * County Government (1) - Boulder County
- * City Government (1) - City of Boulder
- * Educational Institutions (2) - Colorado State University
University of Colorado
- * Non Governmental Organizations (1) - The Nature
Conservancy
- * Private Corporations - (2) - Small Business
Large Business

The *steering committee* conducts its activities via quarterly meetings. A *vision statement* and *memorandum of understanding* represent COORC's organic documents. Fiscal support to date has been through informal cost sharing, donation of materials and staff time, and providing support for meetings. Communications among partners has been on an "as needed" basis by telephone, FAX and correspondence.

- * Given this brief description of the CORRC "administrative mechanism", please comment on the following items:
1. Is the current basis for administering CORRC appropriate from your/your agency's perspective? Would you like the CORRC steering committee to develop a set of administrative guidelines?

Comments/Suggestions: _____

2. Would you suggest expanding the size and composition of the steering committee?

Comments/Suggestions: _____

3. Do you feel the current informal approach to covering CORRC administrative costs is appropriate?

Comments/Suggestions: _____

4. Do you have any preference for frequency of CORRC steering committee meetings, meetings to address issues raised through the CORRC partnership?

Comments/Suggestions: _____

5. Do you have any preference for type and frequency of communications (newsletter, project updates, etc)?

Comments/Suggestions: _____

The CORRC Steering Committee appreciates your inputs into this feasibility study. The final feasibility report will address study objectives previously outlined on the first page of this survey.

If you would like to receive an executive summary of the final study report and/or information on meetings to discuss report findings, please provide your name and mailing address.

If you have any questions about the feasibility study, please feel free to contact the following people:

Dr. Howard R. Alden
800 E. County Rd. 58
Ft. Collins, Co. 80524
(303) 482 - 0983

or

Mr. Dave Augeri
416 S. Grant Ave.
Ft. Collins, Co. 80524
(303) 498 - 9833

General Comments: The CORRC Steering Committee is interested in any comments or suggestions you might have about creative ways to enhance the developing and sharing of information.

APPENDIX D.

BIODIVERSITY CATAGORIES & ISSUES

11 Critical habitat protection, expansion and restoration

(16)

- increase size of areas to support evolutionary processes
- old growth ID and loss
- migration corridors
- establish buffer zones
- develop corridor linked sensitive areas
- ID critical habitats and sensitive areas
- habitat fragmentation
- increase representation of entire ecosystem for protection
- restore managed areas for core designation
- increase core zones
- contiguous habitat protection
- native prairie protection
- sufficient core area size to maintain natural disturbance regimes
- sufficient core area size to maintain biodiversity
- restoration of core zone in eastern plains
- increase wildlife habitat

12 ID & Reduce human impacts and external influences

(13)

- monitor and control acid deposition
- motorized use influences
- general human impacts
- decrease human use in sensitive areas
- no logging
- inter-zone influences
- influence of exotics on endemics
- stop exotic species expansion
- effects of climate change
- eliminate construction/facilities in sensitive areas
- decrease air traffic over core zones
- global environmental destruction
- examine effects of inholdings on ecosystem processes

13 ID, monitor, restore and protect natural processes, threatened and endangered species, and ^{Native} natural wildlife populations

(25)

- monitor rate of natural process loss
- development of detailed automated soils and plant community maps
- base protection on wildlife needs
- threatened and endangered species management
- compare natural vs managed lands
- ID loss of diversity
- sensitive species vs generalists
- baseline inventory of biotic, abiotic resources and natural processes
- increase ecosystem research
- spatial and temporal patterns of zoning on natural processes
- restore original biodiversity
- absence of predators
- large predator reintroduction
- reintroduce extirpated species

13 (cont.) ID, monitor, restore and protect natural processes, threatened and endangered species, and natural wildlife populations

- minimum viable population sizes
- spatial needs of wildlife
- natural disturbance regime ID
- preserve natural processes
- reestablish natural fire regimes
- increase waterfowl protection and sustainability
- increase moose populations
- impacts on wintering elk
- study species with large home ranges for habitat protection
- increase beaver populations for riparian restoration
- develop information about species relationships with humans

14 Riparian/wetland protection and restoration (B)

- wetland and riparian impacts
 - impacts from water diversion
 - increase beaver populations for riparian restoration
 - preserve natural processes
 - wetlands protection
 - riparian restoration
 - natural stream flow restoration
 - water conservation
- (62)

RESOURCE MANAGEMENT CATAGORIES

21 Habitat restoration from extractive/incompatible land uses (2)

- multi-habitat multi-caused restoration
- reclaim mines for development

22 Reduce, monitor and eliminate extractive use and external impacts (15)

- habitat modifications
- decrease logging
- ID effects of roads on habitats
- grazing effects
- over-promotion of wilderness areas
- reduce impacts of commercial recreational activities
- logging effects
- placer mining impacts
- decrease mining in riparian areas
- decrease soil erosion
- impacts on ground nesting birds for grazing
- ski and recreation development
- decrease noise pollution
- monitor visitor carrying capacity thresholds and dispersed recreation use
- offsite impacts to acquifers

23 ID, monitor, restore, and protect sensitive species & areas (15)

- wetlands protection
- wildlife management
- wildlife migration corridors
- riparian restoration
- natural stream flow restoration
- sensitive area corridors through management zones
- ID sensitive areas for extractive management moratorium
- increase cultural heritage sites and trails
- Poudre River as National Heritage Corridor
- global environmental destruction
- increase generations of healthy forests
- loss of big game habitat and increase zone's ability to sustain big game populations
- protection of mineral resources--especially private claims
- increase protection of ecosystems that cross zones
- reconnect ecosystems

24 Implement environmentally compatible philosophies and ecosystem management (4)

- develop low impacting recreation activities
- increase recreational options
- ID areas for controlled burns
- increase protective policies
- review management policies
- review State Health Dept's enforcement of water/air standards
- promote use of native vegetation in public and private areas
- mark designated use areas and use educational billboards
- provide maps to users
- multiple use of public lands
- recreational carrying capacity of reservoirs
- management costs and funding
- encourage watchable wildlife
- multiple resource management
- landscape/ecosystem management
- management to replicate natural disturbances
- collaborate management practices with private land
- enforce multiple use trails
- road closures for sensitive wildlife
- sustainable grazing and agriculture
- change management of Pawnee Grasslands to protection
- increase public participation in management
- National Park ecosystem management
- private landowners equal partners with agencies
- increase tree/shrub plantings
- increase agencies cooperatives on projects
- utilize LAC concept
- increase core compatible use
- increase cooperation among agencies
- no roads in roadless areas
- support the status quo management philosophy
- survey public for campground amenities
- increase access to raw materials
- increase recreational uses
- increase multiple use species

24 (cont.) Implement environmentally compatible philosophies and ecosystem management

- justification of costs for rare and endangered species
- consolidate public land ownerships
- maintain and sustain mineral exploration and production
- identify users of core and management zones
- automated land use monitoring
- balance motorized use with non-motorized use
- water conservation
- redifine zones
- manage big game along front range

76

HUMAN/WILDLAND INTERFACE CATAGORIES

31 Implement low impacting, environmentally compatible philosophies legislatin and economic/environmental sustainability

(30)

- develop a model for human/environment symbiosis
- economic sustainability leading to environmental symbiosis in the cooperation zone
- provide more waste disposal facilities
- control use numbers
- decrease urbanization and buildling near public lands
- decrease inhholdings
- long range planning
- increase open space (general)
- increase open space in foothills
- increase city trail systems
- increase trails for viewing urban wildlife
- increase wildlife habitat
- improve air quality
- increase recycling
- increase car pooling
- increase alternative energy
- determine corridor routes
- water conservation
- redifine zones
- decrease human population
- environmentally compatible building codes and zoning
- fire insurance for housing
- develop low impact recreation
- increase access for foot travel
- designate human waste stations
- control hunting
- no spring hunts
- increase low impact winter use
- increase bike paths
- provide fire protection for wildlife
- increase recreational options
- increase urban wood waste recycling
- increase tree/shrub plantings
- monitor and improve funds to manage public properties
- development models
- increase development if certain species cannot be saved
- concentrate human settlement to increase open ("green") space
- encourage urban forestry
- fee-based limitations on urban parks

32 Determine and reduce negative human influences on adjacent wildlands, agricultural lands and critical resources

(20)

- motorized use influence
- water quality
- urban/agriculture conflicts
- ID small scale agriculture projects
- decrease ohv use
- ID pollution sources
- herbicide use and impacts
- determine corridor routes
- human/wildlife conflicts
- decrease human population
- control hunting
- no spring hunts
- increase low impact winter use
- leave private lands alone
- decrease visual pollution
- increase health of urban forests
- decrease wildlife feeding
- restore diversity to agricultural landscape
- global environmental destruction
- social carrying capacity of recreationists

33 Increase public environmental education

(5)

- public education
- public acceptance of wildlands
- increase public support for natural fire regimes
- develop information about species relationships with humans
- encourage private landowners to conduct ecological stewardship
- encourage mountain community environmental preservation efforts
- educate public on environmental living standards
- increased use of "self-contained" homes

34 Improve access and availability of environmentally compatible uses

(4)

- increase hunter access
- public land access
- private land access
- increase ohv use

71

GRAND TOTAL = 209 ITEMS

APPENDIX E.

MEMORANDUM OF UNDERSTANDING (MOU) REGARDING A DATA SHARING COOPERATIVE BETWEEN

COLORADO STATE UNIVERSITY, U.S. GEOLOGICAL SURVEY,
BOULDER COUNTY, LARIMER COUNTY, COLORADO DIVISION OF WILDLIFE,
ROCKY MOUNTAIN NATIONAL PARK, AND ARAPAHO AND ROOSEVELT NATIONAL FORESTS

DEMONSTRATION DATA COOPERATIVE

INTRODUCTION - The MOU identifies the cooperation needed to explore the feasibility of a data sharing cooperative. The primary focus will be on agencies having data about land areas in the proposed Rocky Mountain Biosphere Cooperative. A demonstration using existing data shared by the core cooperators will determine whether a data cooperative should be formalized. Initially, the data cooperative is envisioned to fall under the umbrella of the Biosphere Cooperative; however, it is recognized that interagency data exchange is a valid objective regardless of the eventual outcome of a biosphere program.

1. Core Cooperators:

Boulder County Land Use (Boulder County)
Larimer County Emergency Services (Larimer County)
Colorado State University (CSU), College of Forestry and Natural
Resources
Colorado Division of Wildlife (DOW)
US Geological Survey (USGS)
Rocky Mountain National Park (RMNP)
Arapaho and Roosevelt National Forest (USFS)

2. Other cooperating agencies and organizations may be added, including but not limited to the following:

University of Colorado, Mountain Research Station
Rocky Mountain Forest and Range Experiment Station
Grand County
Colorado Department of Highways
Colorado State Forest Service
National Center for Atmospheric Research (NCAR)
Boulder County Parks and Open Space
Bureau of Land Management

STUDY AREA - The demonstration area focuses on Lion Gulch, Wild Basin, and Longs Peak project planning areas. This area was chosen due to ongoing planning efforts by the Arapaho/Roosevelt National Forests and Rocky Mountain National Park. In addition, the area includes some of Boulder County mountain areas, and existing data is known to be available. If the demonstration is successful and is ultimately formalized, the area may be expanded to include the remainder of the land covered by the biosphere cooperative which includes most of the Arapaho and Roosevelt National Forests, Rocky Mountain National Park, and much of the private land in Boulder, Larimer, Grand, and possibly Weld counties.

For communication and efficiency, data will be included for all of the following 7-1/2' quadrangles: Estes Park, Glenhaven, Longs Peak, Panorama Peak, Allens Park, and Raymond.

ISSUES and INFORMATION NEEDS - Following is a list of some important issues in the cooperative area where data sharing appears to be a beneficial, efficient approach to meeting needs of the cooperators.

Fire Management and Suppression Coordination

1. What class of fire hazard regulations should be recommended for future development?
2. Where are the high priority areas for fuel hazard reduction or other wildfire mitigation strategies?
3. What are the locations of the critical habitat and migration routes?

Wildlife Habitat & Migration

1. Where does vegetation (vegetation cover) need to be treated to reach the desired habitat structure standards?
2. Where are travel restrictions needed to maintain habitat effectiveness?

Rights-of-Way and Transportation Management

1. What travel routes does the public have legal access to?
2. Do management objectives for any area encourage roads to be open, closed, or obliterated?

Development and Special Uses

1. Does private residential or commercial development complement or conflict with adjacent land use management objectives?
2. Do land management proposals remain consistent with county zoning objectives?
3. What are the critical viewsheds to meet management objectives of various agencies?

These questions were the focus to initiate data sharing, but others may be addressed as the demonstration project proceeds.

EXISTING DATA - Cooperating agencies have a significant amount of data in digital, map, and tabular form. Listed below are the primary data sets from which data will be shared:

National Parks - Vegetative cover type, Landsat (July 1989) TM (Thematic Mapper), zones of concern outside boundary, wildlife migration routes, recreation use, overnight use, traffic counts, and fire management units.

US Forest Service - Forest cover type, roads management, forest cover size class, visual quality, watershed, management area, range allotment, timber component, recreation opportunity, riparian, winter range, road density class, operability class, crown cover percent, and structural stage.

Boulder County - Land ownership parcel maps, roads, building permit historic data (building construction attributes), numerous natural resource, and hazard maps.

Larimer County - Parcel data, geologic hazard, fire hazard, road use history tied to zoning, census data, TIGER maps including tracts, blocks, housing units, population, racial, age, and income information.

Colorado Division of Wildlife - Wildlife distribution and ranges, habitat inventory, species textual data, bird atlas, scientific collections permits, lake survey, stream survey, and historic population data.

US Geological Survey - Digital elevation models, digital line graph (roads, trails, hydrography), land use, and land cover).

Colorado State University - Landsat TM (Thematic Mapper - July 1989) 3 bands.

Colorado State University, College of Natural Resources, will be the focal point for exchange and storage of data.

Following are a set of specifications and procedures that each cooperating party agrees to:

DATA/MAP SPECIFICATIONS - Normally, information will be shared at the 1:24,000 scale. However, some occasions will require data at larger scales, e.g., 1:500 or 1:1,000.

Data Definitions, Standards, and Accuracy - Registration of all maps is considered by all cooperators to be extremely important. Cooperators will keep others aware of registration standards and accuracy. UTM coordinates will be the base for data exchange.

Formats and Software Used by Agencies, Interfacing Needs - Currently, all agencies have a wide variety of hardware, software, and communications capabilities. Since Colorado State University has the majority of all hardware, software, and communications, many conversions are possible. Each agency will be responsible for converting information to common formats and for obtaining reports from the system.

DATA SHARING/COOPERATION PROCEDURES - Data will be shared on an as requested (and as available) basis. Normally, tapes or copies of maps will be reproduced. Colorado State University will play a key role as a focal point for changing data to different formats, if necessary. For example, changing from one software file to another or reading 9-track tapes. As such, CSU will develop a data base for research and instructional purposes. It is not the intent to have CSU receive a copy of data sets as they are updated by the individual agencies. The agency providing the data will normally update shared data only as requested within their program limits. It is the responsibility

of the providing agency to inform the receiving agency about the data's accuracy, registration, and status. The receiving agency is responsible for confirming the accuracy before distribution or use.

Data conversion should be done so that the integrity of the keys or identifiers is retained.

Where data is purchased from an outside source, the data should be acquired for use in the cooperative so there are no future problems using the data for each of our individual purposes. Data should be obtained in digital formats whenever possible rather than just hard copy maps and reports. Data copyrights must be respected.

Data that is sensitive should not be shared as a part of the cooperative until methods of security can be assured. Every effort will be made to share data so there is mutual benefit to both provider and recipients at the least cost. The demonstration should not be used to draw up-to-date conclusions. The status of the data needs to be confirmed by contacting the originating agency. Questions about the reliability of data should be referred to the responsible (providing) agency.

Restrictions on certain data sets are recognized. No data with such restrictions will be shared unless in conformance. Core cooperators will investigate the feasibility of data procurement which will address the legal proprietary concerns of the vendors and allow the data to be shared with other cooperators under a formalized agreement. Each contributing party will ensure information derived from copyrighted data does not infringe on copyrights.

A prime concern will be fairness to other cooperators or interested outside parties. Any appearance of favoritism to one vendor over another will be actively avoided. There will be special care taken to avoid any appearance of conflict of interest or endorsement of any product by the cooperative.

Meetings/Documentation of the Demo/Pilot Sharing Experience - The core cooperators, along with other interested agencies, will meet once each quarter to review the status of the procedures and to refine the operating plan, if necessary. At the end of 18 months the demonstration will be terminated and a decision made as to institutionalize or expand the data cooperative with another MOU.

At each quarterly meeting, minutes will be prepared which document the discussions, issues, and experiences of the demonstration and transmitted to all core cooperators and other interested parties. The sum of these minutes will provide the basis for the evaluation of the effectiveness of the demonstration project.

Cost Collection - Cooperators to this MOU intend to benefit in proportion to the time, energy, data, and equipment they contribute. Normally, exchange of money between cooperators is not anticipated. Each cooperator will contribute resources in relation to the benefits anticipated. Situations may develop where costs to a cooperator are beyond benefits obtained, and it will be necessary to recover costs. (Since Colorado State University is the focal point, it may become advantageous for some cooperators to use skills at CSU. It also might be a benefit to some agency to store data at the University even

though it is beyond University needs.) Any exchange of funds will be handled through subsequent funding agreements.

This Memorandum of Understanding becomes effective when signed by all parties, to remain in force to December 31, 1992, (a period of 18 months), and may be renewed beyond that date with a letter of reaffirmation executed by the signatory representatives. Any party of this Understanding may cancel its participation by sixty days' written notice to the other parties. This Understanding may be amended at any time by written consent of the other signatory representative.

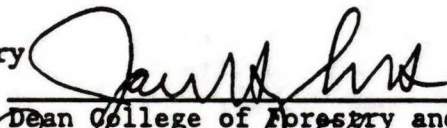
During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex, or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex, or national origin.

No member or delegate of Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

The expenditure by the parties of any sums of money under the provisions of this Understanding is contingent upon adequate appropriations therefor.

Participants agreeing to the above Memorandum of Understanding as of the date shown below:

CSU College of Forestry
and Natural Resources



Dean College of Forestry and Natural Resources

6/10/91
Date


Boulder County



County Commissioner

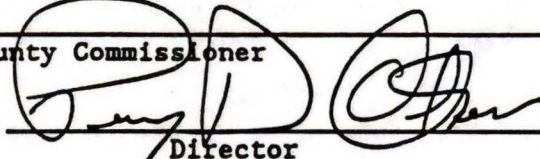
2-4-92
Date

Larimer County


County Commissioner

Date

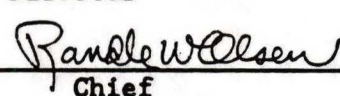
State of Colorado
Division of Wildlife



Director

9/24/91
Date

USDI Geological Survey
Rocky Mountain Mapping Center



Chief

10/7/91
Date

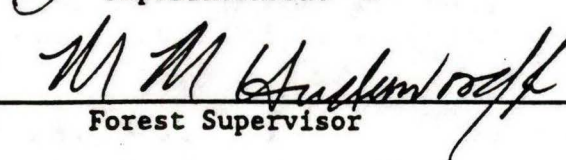
USDI National Park Service
Rocky Mountain Park



Superintendent

6/13/91
Date

USDA Forest Service
Arapaho and Roosevelt
National Forests



Forest Supervisor

6/4/91
Date

APPENDIX F.

February 26, 1993

BYLAWS

OF

THE COLORADO ROCKIES REGIONAL COOPERATIVE

ARTICLE I

NAME AND LOCATION

The name of this organization shall be the COLORADO ROCKIES REGIONAL COOPERATIVE (CORRC). The principal office shall be located at _____.

ARTICLE II

PURPOSES

The Colorado Rockies Regional Cooperative is organized for the purpose of promoting knowledge and understanding of natural and human resources of this region; to encourage sustainable use of these resources through education, research and information sharing; to demonstrate the principles of ecosystem management; and to create and develop a means of cooperation among resource management agencies, educational institutions, organizations, the private sector and citizens. Further, CORRC's activities will be carried out in cooperation with the United States' Man and the Biosphere (MAB) program, established in 1971, is part of an international program designed to provide knowledge, skills, and human values to support harmonious relationships between people and their environment.

ARTICLE III

DEFINITIONS

For the purpose of these Bylaws, the term "cooperative" refers to the Colorado Rockies Regional Cooperative.

ARTICLE IV

EFFECT OF BYLAWS

Nothing in these Bylaws shall be construed to supersede the provisions of the 1992 Joint Memorandum of Understanding (MOU). In the event of a conflict, the MOU, unless amended, shall prevail.

ARTICLE V

MEMBERSHIP

Section 1. Classes of Members. CORRC shall have four classes of members as follows:

PARTICIPATING MEMBERS, comprised of government agencies, 501(c)(3) non-profit organizations, and educational institutions interested in promoting the purposes of CORRC through monetary or in-kind contributions.

SUSTAINING MEMBERS, comprised of individuals interested in promoting the purposes of CORRC through monetary or in-kind contributions.

CORRESPONDING MEMBERS, comprised of interested agencies, organizations, educational institutions, representatives of the private sector, and individuals interested in promoting the purposes of CORRC.

STUDENT MEMBERS, comprised of active full-time students at high schools, colleges and universities who are interested in promoting the purposes of CORRC.

Section 2. Special Membership Classes. The CORRC Board of Directors may, at a regular meeting or at a special meeting called for such purposes, establish special membership classes (sustaining, associate or life) based upon interest and significant/tangible contributions to the purposes of CORRC.

Section 3. Acceptance to Membership. Any agency, organization, education institution, representative of the private sector or individual will be accepted into one of the membership classes based upon an application and payment of dues to CORRC.

ARTICLE VI

DUES

Annual membership dues shall be determined by resolution of the CORRC Board of Directors at each regular annual meeting, or at any special meeting called for such purposes. Payment of dues shall cover the period of one year, unless determined otherwise by the _____ -
_____.

ARTICLE VII

OFFICES

The office of CORRC in the State of Colorado is to be located at a place to be determined by the Board of Directors. The agent in charge is _____, located at the same address. CORRC may also maintain offices at other places as deemed necessary by the Board of Directors.

ARTICLE VIII

CORRC OFFICERS AND BOARD OF DIRECTORS

Section 1. Number, Election and Term of Office.

- 1996 →
- a. The business of the cooperative shall be managed by a Board of Directors consisting of the Chairperson, Vice Chairperson, Secretary, and Treasurer ~~plus additional elected Board members.~~
 - b. The Board members shall be comprised of the ~~participating~~ members, which election shall be held prior to 31 December each year, beginning with the election for the year 1994. ~~Up to three Board members may represent 501(c)(3) non-profit organizations or organizations which are not participating members.~~
 - c. Officers shall be elected by the Board at its annual meeting from amongst the Board members elected by the membership.
 - d. Officers and Board members shall be eligible for re-election subject to the limitation that they shall not serve more than six consecutive years in any capacity.
 - e. Elected officers and Board members shall assume their office, duties, and responsibilities on 1 January.
 - f. In event of a tie, Chairperson is a tiebreaker.
 - g. The initial Board shall consist of the persons named below for the positions specified from the date of adoption of these Bylaws through December 31, 1995. In the future, elections shall be held in accordance with Article VII, Section 1.b. Officers will serve for a full three years. The elected Board members will serve on a staggered basis as shown below. The first such election shall be held prior to December 31, 1995, for terms beginning January 1, 1996.

Chairperson	(3 years)
Vice Chairperson	(2 years)
Secretary	(1 year)
Treasurer	(3 years)
Board Member	(1 year)
Board Member	(1 year)
Board Member	(1 year)
Board Member	(2 years)
Board Member	(2 years)
Board Member	(2 years)
Board Member	(3 years)
Board Member	(3 years)
Board Member	(3 years)
Additional Members	

Section 2. Nominations and Elections. A nominating committee for election of offices shall consist of at least five members, selected with due consideration to representation from resource

management agencies, 501(c)(3) non-profit organizations, and educational institutions, and shall be appointed by the Chairperson with approval from the Board. This committee shall make at least one nomination for each Board position. Nominees shall be selected from the participating members. Elections will be by mailed ballot prior to 31 December, on an annual basis beginning in 1995.

Section 3. Quarterly and Annual Meeting.

- a. Quarterly meetings of the membership shall be held at a place to be determined from year to year by the Board.
- b. An annual meeting of the Board and membership shall be held at a place to be determined from year to year by the Board. This meeting will constitute one of the quarterly meetings.
- c. The Board from time to time may provide by resolution for the holding of its business meetings and may fix the time and place thereof.

Section 4. Duties, Powers and Committees.

- a. The Board shall be responsible for the control and management of the affairs, property and interests of CORRC consistent with the MOU.
- b. The CORRC Chairperson may create and appoint committees to assist the Board in the conduct of CORRC affairs subject to approval by the Board.

Section 5. Chairperson. At all meetings of the membership and Board, the Chairperson, or in that person's absence the Vice Chairperson, shall preside.

Section 6. Quorum. At all meetings of the Board, a simple majority of the total membership of same shall constitute a quorum for the transaction of business.

Section 7. Manner of Acting.

- a. At all meetings of the Board, each officer and Board members shall have one vote.
- b. Except as otherwise provided by the MOU or by these Bylaws, the action of a majority of the Board where a quorum is present shall be the act of that group.

Section 8. Vacancies. Any vacancy in the Board occurring by reason of an increase in the number of its members or by reason of resignation, disqualification, removal or inability to act, or otherwise, shall be filled for the unexpired portion of the term by a majority vote of the remaining Board members.

Section 9. Resignation. Any officer or Board member may resign at any time by giving written notice to any officer or elected Board member. Unless otherwise specified in such notice, such resignation shall take effect upon receipt thereof by the Board, and the acceptance of such resignation shall not be necessary to make it effective.

Section 10. Removal. Any officer or Board member may be removed for cause at any time by the affirmative vote of two-thirds of the entire participating membership given at any special meeting of the members called for this purpose, or at a quarterly or annual meeting of the members.

Section 11. Salary. No stated salary shall be paid to officers or Board members, as such, for their services in the conducting of Board business.

Section 12. Expenses. Expenses incurred upon prior approval by the Board while conducting CORRC business may be reimbursed upon approval by the Board.

Section 13. Contracts.

- a. CORRC may enter into contracts necessary to carry out its stated purposes articulated in the MOU and these Bylaws.
- b. Any Board member, personally and individually, may be a party to or may be interested in any contract or transaction of CORRC, and none of these members shall be liable in any way by reason of such interest, provided that the fact of such interest be disclosed or made known to the Board, and provided that this group shall authorize, approve or ratify such contract or transaction by the majority vote of a quorum (not counting the vote of the interested party). This Section shall not be construed to impair or invalidate or in any way affect any contract or transaction which would otherwise be valid under the law.

ARTICLE IX

OFFICERS

Section 1. CORRC Officers. The officers of CORRC shall consist of a Chairperson, Vice Chairperson, Secretary, and Treasurer.

Section 2. Chairperson. The Chairperson shall be the chief executive officer of CORRC and, subject to the direction of the Board, shall have general responsibility for the business of the Board.

Section 3. Vice Chairperson.

- a. During the absence or disability of the Chairperson, the Vice Chairperson shall have all the powers of and be subject to all the restrictions upon the Chairperson. The Vice Chairperson is responsible for conducting Board elections.
- b. If the office of the Chairperson becomes vacant, the Vice Chairperson shall succeed to that office for the balance of the term. In such event, there will be written notice to the membership.

Section 4. Secretary.

- a. In general, shall perform all duties incident to the office of Secretary and such other duties assigned by the Chairperson of the Board.
- b. Specific responsibilities include recording all proceedings of meetings, causing all notices to be duly given, being the custodian of CORRC records, maintaining a list of CORRC members, and insuring that all records are properly kept and filed.

Section 5. Treasurer.

- a. In general, shall perform all duties incident to the office of Treasurer and such other duties assigned by the Chairperson of the Board.
- b. Specific duties include having charge of and being responsible for all CORRC financial assets, depositing CORRC monies in appropriate banks or trusts as directed by the Board, receiving and disbursing funds as authorized, keeping an account of all the business and transactions of CORRC, and rendering to the CORRC officers, Board and membership periodic statements on CORRC's fiscal well-being.

ARTICLE X

EMPLOYEES

Section 1. Executive Director.

- a. There may be paid administrative support to directly assist the Officers and the Board in conducting the daily and special business of CORRC. This person will not have a vote on the Board.
- b. Additional responsibilities may include monitoring contracts, quarterly and annual meeting logistics, producing quarterly newsletters, and assisting appointed committees in completing their tasks.
- c. With direction from the Officers and the Board, shall develop an annual work plan to effectively accomplish support responsibilities.

Section 2. Salary. The salary or other compensation shall be fixed from time to time by the Officers and Board.

Section 3. Sureties and Bonds. In case the Officers and Board shall so require, any agent of CORRC shall execute to CORRC a bond in such sum and with such sureties as the Officers and Board may direct, conditional upon the faithful performance of duties for CORRC, including responsibility for negligence and/or the accounting for all property, funds or assets of CORRC which may come into his or her hands.

ARTICLE XI

COMMITTEES

Section 1. Appointment. The Chairperson, with approval from the Board, shall have the authority to appoint and discharge standing and *ad hoc* committees necessary to conduct the business of CORRC. Each committee will elect its own chair.

Section 2. Term of Office. The term of office for all standing committees shall be for three years, *ad hoc* committees for a designated time based upon the committee charge.

Section 3. Education and Outreach Committee. This committee will include the Vice Chairperson, three members of the Board and may include three members from the general membership, the Chair of the Projects Committee, and the Executive Director. Duties include soliciting, reviewing and making recommendations to the Board regarding the range of educational and outreach activities to carry out the purposes of CORRC. This committee shall also serve as a facilitator to develop publications and educational programs.

Section 4. Projects Committee. This committee will include the Chairperson, three members of the Board and may include three members from the general membership, the Chair of the Education and Outreach Committee, and the Executive Director. Duties include soliciting cooperative activity and project ideas within the CORRC area, reviewing and prioritizing projects consistent with CORRC purposes and member resources, making recommendations to the Board on projects to be undertaken, and facilitating projects and monitoring their successful completion.

Section 5. Program and Finance Committee. This committee will be composed of the Officers, Board, committee chairs, and the Executive Director. Duties include assimilating input from standing and *ad hoc* committees in order to develop the basis for short- and long-range programs and developing annual program plans, budgets and implementation strategy. This committee will present its findings to the full membership.

ARTICLE XII

EXECUTION OF INSTRUMENTS

All instruments or rights of any nature related to CORRC business may be signed, executed, verified, acknowledged, and delivered by such persons and in such a manner as determined by the Board.

ARTICLE XIII

FISCAL YEAR

The fiscal year of CORRC shall be _____ of each year through _____ of the following year; provided, however, that the fiscal year of CORRC may be further fixed by the Board as the needs of CORRC's business require.

ARTICLE XIV

AMENDMENTS TO THE BYLAWS

Amendments or additions to the Bylaws may be made with a two-thirds majority vote of the Board favoring the change, provided the membership has been informed in writing by certified letter of the anticipated change 60 days prior to the Board's action.

ARTICLE XV

INDEMNITY

Section 1. Indemnification of Board Directors, Officers, etc. CORRC declares that any person who serves as a Board member, officer, employee, or member of any committee, or on behalf of the cooperative, shall be deemed CORRC's agent for the purposes of this Article and shall be indemnified by CORRC against expenses (including attorney's fees), judgments, fines, excise taxes, and amounts paid in settlement actually and reasonably incurred by such person who was or is a party or threatened, pending or completed action, suit, or proceeding, whether civil, criminal, administrative, or investigative by reason of such service, providing such person acted in good faith and in a manner he/she reasonably believed to be in the best interests of CORRC and, with respect to any criminal action or proceeding, had no reasonable cause to believe that his/her conduct was unlawful.

Section 2. Indemnification Against Liability to CORRC. No indemnification shall be made in respect to any claim, issue, or matter as to which a person covered by Article XV, Section 1, shall have been adjudged to be liable for negligence or misconduct in the performance of his/her duty to CORRC unless and only to the extent that the court in which such action, suit, or proceeding was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnification for such expenses which such court shall deem proper.

Section 3. Indemnification in Criminal Actions. No indemnification shall be made in respect to any criminal action or proceeding as to which a person covered by Article XV, Section 1, shall have been adjudged to be guilty unless and only to the extent that the court in which such action or proceeding was brought shall determine upon application that, despite the adjudication of guilt but in view of all the circumstances of the case, such person is entitled to indemnification of such expenses or fines which such court shall deem proper.

Section 4. Other Indemnification. The indemnification provided by this Article shall not be deemed exclusive of any other rights to which any person may be entitled under the MOU, any agreement, any other provision of these Bylaws, vote of the disinterested Board members, or otherwise, and any procedure provided for by any of the foregoing, both as to action in his/her official capacity and as to action in another capacity while holding such office.

Section 5. Period of Indemnification. Any indemnification pursuant to this Article shall (a) be applicable to acts or omissions which occurred prior to the adoption of this Article, and (b) continue as to any indemnified party who has ceased to be a Board member, officer, employee, or agent of CORRC and shall inure to the benefit of the heirs and personal representatives of

such indemnified party. The repeal or amendment of all or any portion of these Bylaws which would have the effect of limiting, qualifying, or restricting any of the powers or rights of indemnification provided or permitted in this Article shall not, solely by reason of such repeal or amendment, eliminate, restrict, or otherwise affect the right of indemnification of such person, with respect to any acts or omissions which occurred prior to such repeal or amendment.

Section 6. Insurance. CORRC may purchase and maintain insurance in such amounts deemed appropriate to protect itself and any person acting in an official capacity for CORRC, the officers, or the Board. CORRC may also create a trust fund, grant a security interest or use other means to ensure the payment of sums necessary to effect indemnification.

Section 7. Right to Impose Conditions of Indemnification. CORRC shall have the right to impose, as conditions to any indemnification provided or permitted in this Article, such reasonable requirements and conditions as the Board may deem appropriate in each specific case, including but not limited to any one or more of the following:

- a. that any counsel representing the person to be indemnified in connection with the defense or settlement of any action shall be counsel that is mutually agreeable to the person to be indemnified and to CORRC;
- b. that CORRC shall have the right, at its option, to assume and control the defense or settlement of any claim or proceeding made, initiated, or threatened against the person to be indemnified; and
- c. that CORRC shall be subrogated, to the extent of any payments made by way of indemnification, to all of the indemnified person's right of recovery, and that the person to be indemnified shall execute all writings and do everything necessary to assure such rights of subrogation to CORRC.

Section 8. Limitations of Indemnification. Notwithstanding any other provision of these Bylaws, CORRC shall neither indemnify any person nor purchase any insurance in any manner or to any extent that would jeopardize or be inconsistent with qualification of CORRC as an organization described in Section 501(c)(3) of the Internal Revenue Code or would result in liability under Section 4941 of the Internal Revenue Code.

ARTICLE XVI

PROCEDURE

Procedures and other items not specified in these Bylaws or by action of the meeting shall be in accordance with the Pocket Manual of Rules of Order by Henry M. Robert.

ARTICLE XVII

GENERAL PROHIBITIONS

Section 1. CORRC shall be operated exclusively for the educational purposes set forth in Article II.

Section 2. No part of the assets of CORRC under any circumstance shall inure to the benefit of any individual.

Section 3. No part of the activities of CORRC shall consist of an intervention on the policies, programs, and policy making authority of any class of CORRC members.

Section 4. No part of the activities of CORRC shall consist of carrying on propaganda or attempting to influence legislation.

Section 5. CORRC shall not participate in, nor intervene in any political campaign on behalf of any candidate for public office.

Section 6. CORRC shall not be organized or operated for profit.

Section 7. CORRC shall not:

- a. lend any of its income or assets without the receipt of adequate security or reasonable rate of interest to;
- b. pay any compensation, in excess of a reasonable allowance for salaries or personal services actually rendered to;
- c. make any part of its services available on a preferential basis to;
- d. make any purchase of securities or other property for more than adequate consideration in money or money's worth from;
- e. sell any securities or other property for less than adequate consideration in money or money's worth to; or
- f. engage in any other transactions which result in substantial diversion of its assets to

any officer, member, Board member, agent of CORRC, or any substantial contributor to CORRC.

AN EXECUTIVE SUMMARY
OF
RECOMMENDATIONS
TO
ESTABLISH
THE
COLORADO ROCKIES REGIONAL COOPERATIVE
1993

ACKNOWLEDGEMENTS

This report on guidelines to establish a regional cooperative and identify appropriate "deliverables" to address biodiversity, resource management, and human/wildland interface issues of mutual concern was made possible by:

* ***The Colorado Rockies Regional Cooperative (CORRC) Steering Committee.*** The steering committee includes the following individuals.

- * Jim Crain, Director, City of Boulder Real Estate & Open Space
- * Alan Carpenter, Colorado Land Steward, The Nature Conservancy
- * Rich Larson, Program Manager, Watchable Wildlife for the Central Region, Colorado Division of Wildlife
- * Carl Bock, Professor of Biology, University of Colorado
- * Dave Stevens and Larry Gamble, Land Use Specialists, Rocky Mountain N.P.
- * Roger Tarum, Staff Officer for Planning and Information Systems, Arapaho-Roosevelt N.F.
- * Bob Alexander, Research Geographer, U.S. Geological Survey
- * John Barnett, Planning Director, Larimer County
- * Rick Schroeder, Research Biologist, U.S. Fish & Wildlife Service
- * Howard Alden, Professor Emeritus, Colorado State University (Chairperson and Feasibility Study Project Leader)

These individuals have made significant contributions in developing the CORRC vision statement, the CORRC memorandum of understanding, the substance of the CORRC study leading to this report, proposed administrative guidelines, and a CORRC program of deliverables. Communication and coordination within the group has been excellent, constructive and professional.

* ***Other Interested Parties.*** Several individuals representing other potential cooperators in CORRC have participated in work sessions, committee working groups, and business meetings. They have helped immeasurably in assisting the Steering Committee in maintaining its focus, bringing relevant ideas and suggestions to the table to further the implementation of a cooperative, and providing key inputs to enhance this study.


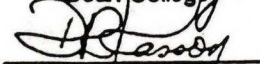
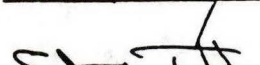

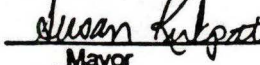
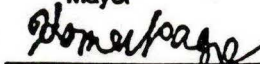
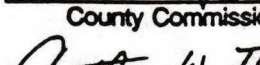
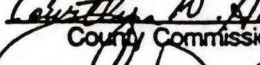

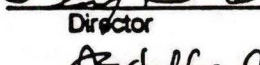


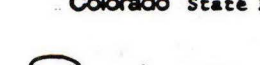
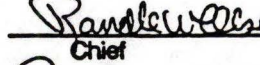
- * Don Brown, Boulder County Parks and Open Space
- * Todd Mowrer, Mensurationist, Rocky Mountain Forest & Range Experiment Station
- * Bill Wilcox, Assistant State Forester, Colorado State Forest Service
- * Denis Dean, Faculty Member, G.I.S., Colorado State University
- * Austin Condon, Staff Officer for Lands, Minerals & Water, Arapaho-Roosevelt N.F.
- * Tom Stohlgren, Global Change Research Coordinator, Rocky Mountain Regional Office, National Park Service
- * Frances Pusateri, Colorado Division of Wildlife

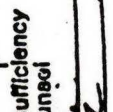
* ***Study Staff.*** Several students contributed a significant amount of time and effort beyond contract agreements to bring this study to closure. They are:

- * Dave Augeri, Research Associate, Colorado State University
- * Susan Barro, Consultant for Statistical Analysis, Colorado State University
- * Susan Pierce, Manuscript Typing and Editing, Colorado State University

* **Project Funding.** Appreciation is expressed to the City of Boulder, the Colorado Division of Wildlife, the Arapaho-Roosevelt N.F., and the Rocky Mountain Forest & Range Experiment Station for providing the necessary support for conducting project work to complete this study. Thanks is also due to the Colorado office of The Nature Conservancy for being the fiscal manager for the study.

* **Agency Participants, per the CORRC Memorandum of Understanding.** Without the initial MOU as a basis for CORRC to proceed, CORRC would not have been able to define and develop this report. Appreciation is expressed to those who share the vision that meaningful data sharing and cooperative research may be the most efficient and cost effective way to deal with complex biodiversity, resource management, and human/wildland interface issues. Participants to the MOU are:

Colorado State University Forestry and Natural Resources	 Dean College	4/1/92 Date
University of Colorado	 [illegible]	7/8/92 Date
City of Boulder	 City Manager	4/17/92 Date
City of Fort Collins	 Mayor	4/30/92 Date
Boulder County	 County Commissioner	9/16/93 Date
Larimer County	 County Commissioner	8-13-92 Date
State of Colorado Division of Wildlife	 Director	5-29-92 Date
Colorado State Forest Service	 State Forester	4-28-92 Date
The Nature Conservancy	 Colorado State Director	4-6-92 Date
USDI Geological Survey Rocky Mountain Mapping Center	 Chief	10/2/92 Date
USDI National Park Service Rocky Mountain National Park	 Superintendent	5/8/92 Date
USDA Forest Service Rocky Mountain Forest and Range Experiment Station	 Director	4 Mar 92 Date
USDA Forest Service Arapaho and Roosevelt National Forests	 Forest Supervisor	2/24/92 Date
USDI Fish and Wildlife Service National Ecology Research Center	 Director	5/21/92 Date

Approved as to Legal Sufficiency
Office of University Counsel
By 
Date 4/17/92

COLORADO ROCKIES REGIONAL COOPERATIVE (CORRC)

SECTION 1 - An Overview

A. General

The idea for a regional cooperative was initiated in October, 1989 in Boulder, Colorado. That early meeting included participants from the City and County of Boulder, The University of Colorado, Colorado State University, the National Center for Atmospheric Research, the U.S. Geological Survey and the Colorado Division of Wildlife. Discussion centered around the status of nationally designated biosphere reserves in this region and their role in fostering cooperative research. This led to the idea of a regional biosphere cooperative affiliated with the U.S. Man and the Biosphere Program (MAB).

In 1990 a vision statement was prepared to clarify and guide the thinking of the participants from the early meetings. This vision statement was approved, a steering committee established and a chairperson was selected to explore the organizing and formalizing of a regional cooperative. The key points of the vision statement are:

* ***Purpose:*** "promote knowledge and understanding of the natural and human resources of this region, to encourage wise use of these resources through research; data base development and integration; education; and the demonstration of principles for ecosystem management..."

* ***Organization:*** "to create and develop means of cooperation among organizations involved in research, education, and resource management. These organizations include federal, state, county and city agencies; educational institutions; and private organizations. A more formal organization will be established, with a coordinating committee composed of representatives from cooperating organizations."

In conjunction with the vision statement, a Colorado Rockies Data Cooperative project was initiated in early 1991. This demonstration project was designated to share basic resource information on wildfire management, wildlife habitat/migration and other issues affecting biodiversity at a "test bed" area of interest to the Arapaho-Roosevelt N.F., Rocky Mountain N.P., Colorado Division of Wildlife, Boulder County Land Use Dept., and the U.S. Geological Survey.

CORRC's activities, 1991-92:

* ***October 1991 Issues Work Shop:*** Approximately 40 participants from city, county, state and federal agencies; the private sector; and educational institutions met in Fort Collins to list current and "near future" issues (dealing with biodiversity, resource management and the human/wildland interface) that should or need to be addressed through cooperative efforts.

* *Memorandum of Understanding (MOU), 1992:* In 1992, 13 entities signed an MOU agreeing in principle to cooperate in developing and sharing information related to natural resource use, planning, and management issues.

* *Conducting a CORRC Feasibility Study, Summer and Fall 1992:* Consistent with the initial meetings to explore a regional cooperative, CORRC's vision statement and the MOU, a feasibility study was initiated.

B. CORRC Goals and Objectives

**** Goals:***

* Promote research needs and application, education, and demonstration activities related to ecosystem principles and economic development with regard to biodiversity, resource management and the human/wildland interface.

* Enhance information sharing, coordination, cooperative research and education related to the first goal.

* Affiliate with the U.S. Man and the Biosphere Program (MAB) as a regional cooperative.

* *Objectives: The following were established to achieve CORRC goals and meet MAB cooperative guidelines:*

* Describe and delineate CORRC'S biogeographical region.

* Identify priority issues of regional concern (biodiversity, resource management, and the human/wildland interface).

* Determine the interest in formalizing CORRC and future affiliation with MAB.

* Identify an administrative mechanism for CORRC.

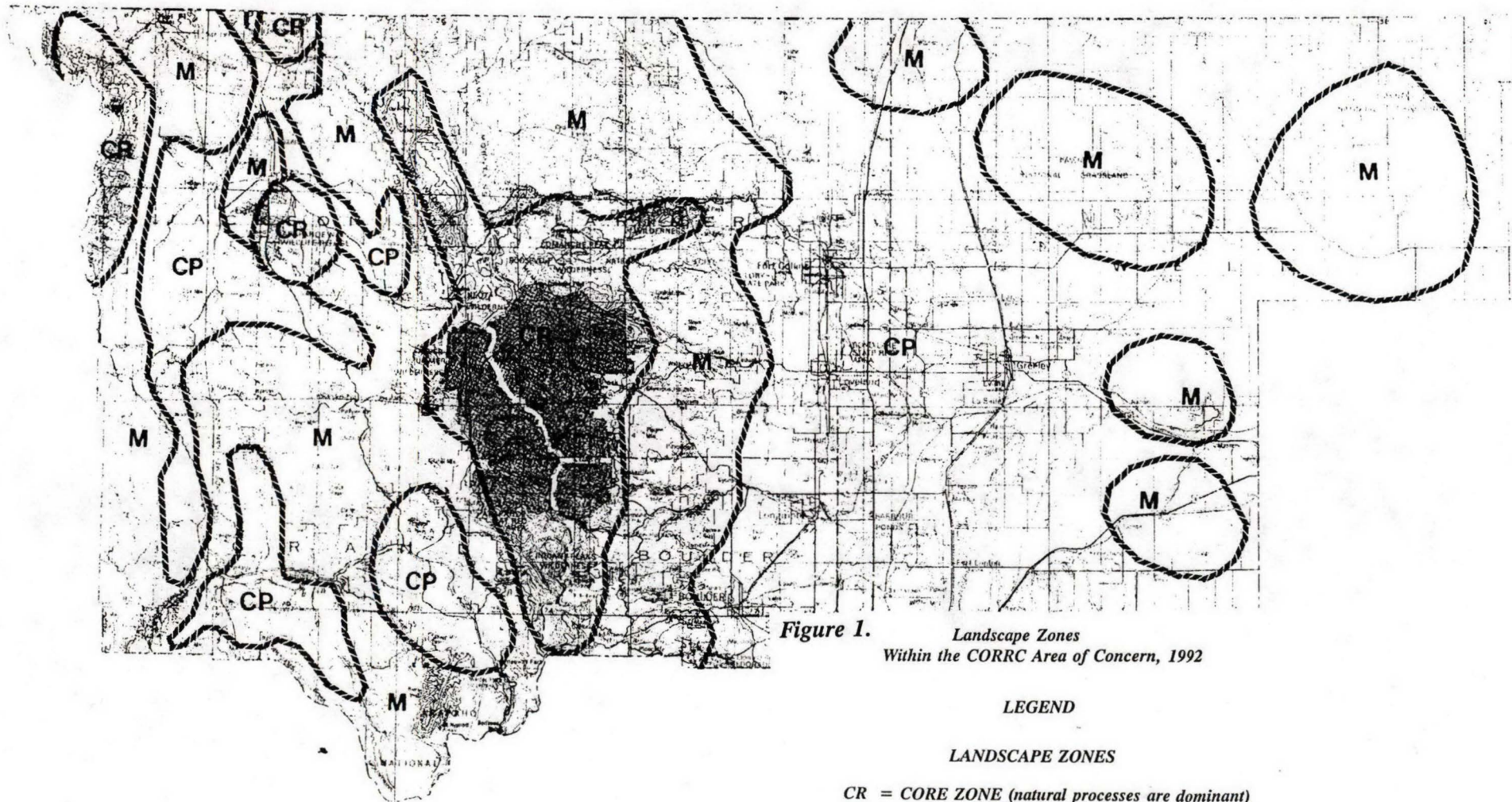
* Identify a research, data sharing and education program that addresses priority issues (deliverables).

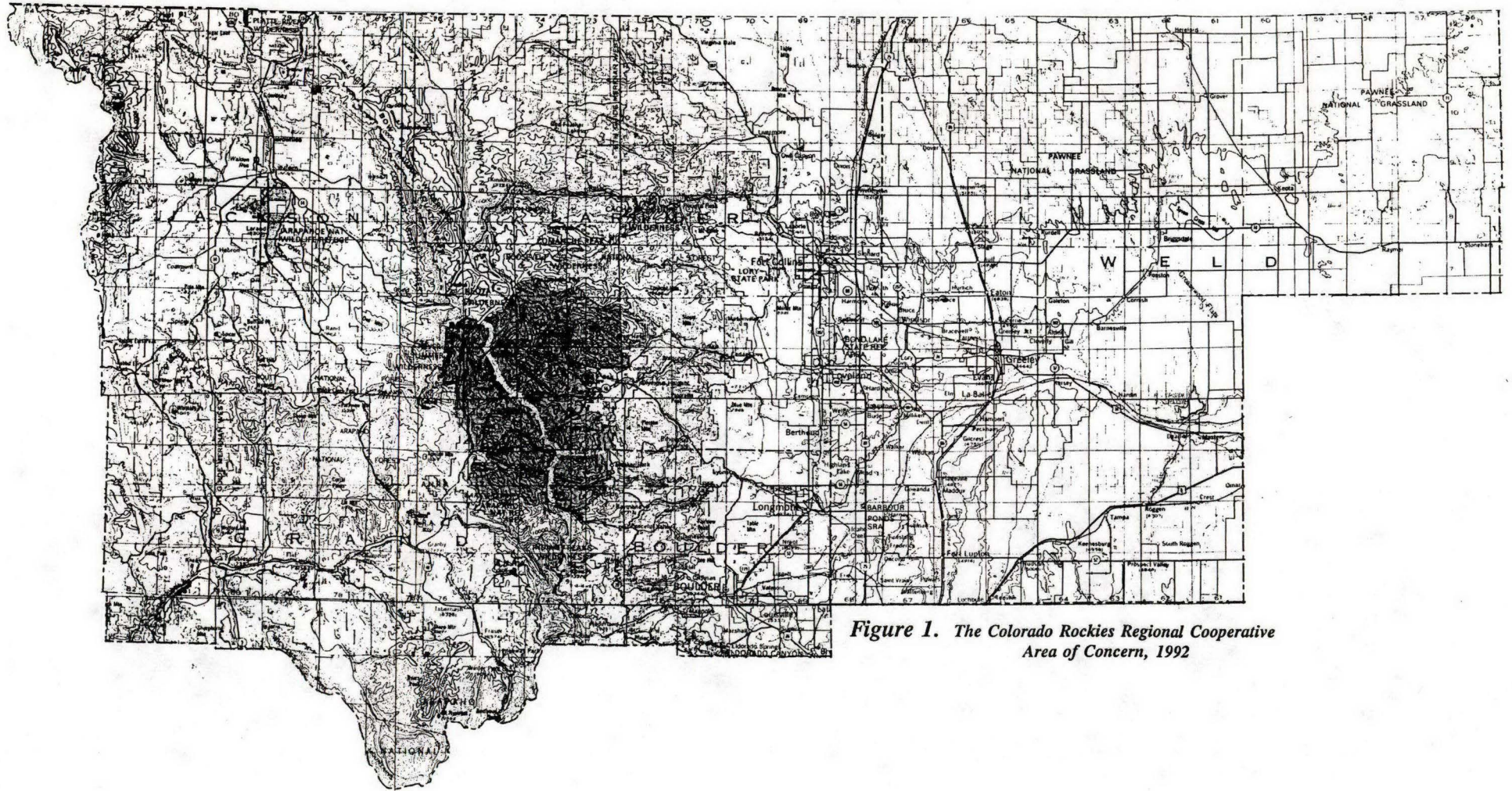
SECTION 2. CORRC Biogeographical Region

A. Area of Concern

The "working area boundary" for CORRC is shown in Fig. 1 of this report. It is based upon the following:

* The five county area includes a range of issues typical to the central Rocky Mountains and high plains region.





*Figure 1. The Colorado Rockies Regional Cooperative
Area of Concern, 1992*

- * The area is small enough in size to allow potential research programs, data sharing projects and educational activities to be accomplished within resources available to cooperators.
- * The area has excellent examples of the three landscape zones outlined by MAB (core, management and cooperative).
- * The area has four existing biosphere reserves within its boundary (Central Plains, Fraser, Niwot Ridge, and Rocky Mountain).
- * The area includes the two dominant ecoregions of Colorado (Bailey, 1976; Bailey 1980).

B. Landscape Zones

The area of concern provides a "landscape for learning" in the central Rocky Mountains and high plains region. The three zones are shown in Fig. 1.

- * **Core Zone** - land areas where natural processes are dominant.
- * **Management Zone** - land areas where natural processes and human influences are codominant or interact.
- * **Cooperation Zone** - land areas where human influences are dominant.

SECTION 3. Priority Issues

A. Background

CORRC, through a series of "issue identification and scoping" activities, has related priority issues to the three landscape zones shown in Fig. 1. The function of these zones is to provide a biogeographical focal point to identify issues related to biodiversity, resource management and the human/wildland interface.

Definitions of the issue categories are:

- * **Biodiversity** - has two components: (1) plants and animals (bio), and (2) their richness, the number and diversity of individual species of plants and animals or in combination as ecosystems in a geographic location.
- * **Resource Management** - providing supervised and selective stewardship for the maintenance, protection and sustained use of timber, mineral, wildlife, water and recreational resources for future generations.
- * **Human-Wildland Interface** - where human activities and influences physically meet, integrate and may modify naturally occurring plants, animals and ecosystems.

B. Priority Issues

Based upon the array of CORRC's issue scoping activities, priority issues "ripe" for cooperative efforts (research projects, data sharing, educational activities) in each landscape zone are:

- * **Core Zone** - identify and reduce human impacts and external influences on/in this zone; identify, monitor, restore, and protect natural processes, threatened and endangered species and native wildlife populations; and implement environmentally sensitive policies with emphasis on ecosystem management.

- * **Management Zone** - implement environmentally compatible policies with an emphasis on ecosystem management; and identify and reduce human impacts and external influences on/in this zone.

- * **Cooperation Zone** - determine and reduce negative human influences on adjacent wildlands, agricultural lands and critical resources; riparian/wetland protection and restoration; implement low impact policies that contribute to both environmental and economic sustainability; and protect, expand and restore critical wildlife habitat.

It is important to note that responses from a systematic survey (citizens, management agencies at all levels of government, and conservation organization NGO's) provided the basis for the above priorities.

SECTION 4 - CORRC Program Recommendations (Deliverables)

A. Role Definition

The systematic survey (see previous section reference) identified information/data sharing, research and educational activities, and information forums as appropriate roles for CORRC. Inappropriate roles were considered lobbying, taking positions on controversial issues, intervening in existing policy and management responsibilities, and influencing public land designations and private property rights.

B. Program Recommendations - CORRC Deliverables

CORRC recommendations are divided into four "deliverables" related to priority issues within the CORRC area. These are data gathering and sharing, joint research and management projects, educational and outreach activities, and affiliating with other established or emerging programs that hold compatible or related purposes. The specific deliverables are shown in Table 1 of this report. Program deliverables are essentially "doable" products within the current responsibility and resource capability of cooperating entities.

Table 1. Deliverable Products Identified by the CORRC Steering Committee and Interested Participants, 1993.

Program Item	Activity	Project Leader	Cooperators	Time Line
*GIS Data Coop	a. Extend project agreement to Dec. 31, 1998. b. CSU to be data repository for access & use by CORRC. c. Select project leader(s). d. Develop short & long range products, support needs.	Roger Tarum, USFS Denis Dean, CSU	US Forest Service Co. State Univ. Boulder County City of Boulder Larimer County Rocky Mtn. N.P. U.S.G.S. Co. Div. of Wildlife	Underway, to be completed, 1993
*Coop Research	a. Core Zone - Habitat mapping for lynx & wolverine.	Sandy Haire, USF&WS	Co. Div. of Wildlife US Fish & WL Service Co. State Univ. Rocky Mtn. N.P. US Forest Service	Fall 1993 - 1997
	b. Management Zone - Natural Variability of Forest Ecosystems.	Dale Brockway, USFS	Same as a. Co. Forest Service	RFP advertised Tentative, 1993-94
	c. Cooperation Zone - Biodiversity of Open Space Grasslands at Suburban/Agric. Interface.	Dr. Carl Bock, CU	Univ. of Co. City of Boulder US Fish & WL Service Co. Div. of Wildlife	Fall 1993 - 1997
	d. All Zones - Overview paper on biodiversity issues.	Rick Schroeder, USF&WS	All CORRC participants	Feb. - Aug. 1994
*Education & Outreach	a. Sponsor data sharing workshops.	Denis Dean, CSU	All CORRC participants	1994
	b. Produce research reports.	Project Leaders & Exec. Director	All Project cooperators	Upon Completion
	c. Produce CORRC brochure & quarterly newsletter.	Exec. Director	All CORRC participants	Dec. 1993
*Affiliate With Other Programs	a. Seek formal "ties" with TERRA, CSU's Human Dimensions Lab, MAB Reserves, NPS Water Res. CPSU, Wildfire Subcomm. - Co. Nat. Hazards Council.	Exec. Director		Jan. 1994

SECTION 5 - Guidelines to Establish CORRC as a Regional Cooperative

Partners to the initial CORRC MOU supported the premises that: CORRC should have an administrative organization to insure that deliverables in fact are timely and of professional quality; that there is a set of administrative procedures to assure accountability; that there is a modest program administrative budget to support an Executive Director to implement CORRC objectives; and provide program management.

A. Administrative Recommendations

Figure 2 of this report represents the recommended organizational structure to implement CORRC objectives and program deliverables (Section 4).

The Executive Director will be the single CORRC employee. That person will be responsible for: directly assisting the Officers and the Board in conducting the daily and special business of CORRC; preparing and submitting funding proposals; monitoring research contracts; supervising quarterly and annual meeting logistics; producing quarterly newsletters, research publications, project reports, and brochures; assist appointed committees in completing their tasks; maintaining liaison with other organizations having similar or related purposes; and securing tax exempt status (501-C-3) and complete other documentation necessary to formalizing partnerships.

The Executive Director is responsible to the Board of Directors. The initial Board will be comprised of MOU partners who make contributions (financial or in-kind) to the management of CORRC. The Board will elect its own officers (Chairperson, Vice Chairperson, Secretary, and Treasurer) and initially serve on a staggered basis from one to three years. Key committees are Education & Outreach, Research & Management Projects, and Program & Finance. Details of the organizational structure and administrative guidelines are covered in CORRC's proposed bylaws.

B. Budget Recommendation

The current CORRC Steering Committee recommends the following budget to support the Executive Director and manage the CORRC program.

*** The budget recommendation (annual) for a 1/2 time executive director is:**

<u>Item</u>	<u>Unit</u>	<u>Total</u>
a. Salary:	\$1,500/mo.	\$18,000
b. Publications (brochure, quarterly news letter)		\$1,500
c. Office Rental (provided by CORRC member)		- 0 -
d. Office Costs (Telephone, typing, supplies mailing)		\$3,250
e. Travel	900 mi/mo. @ .20/mi	<u>\$2,250</u>
		\$25,000

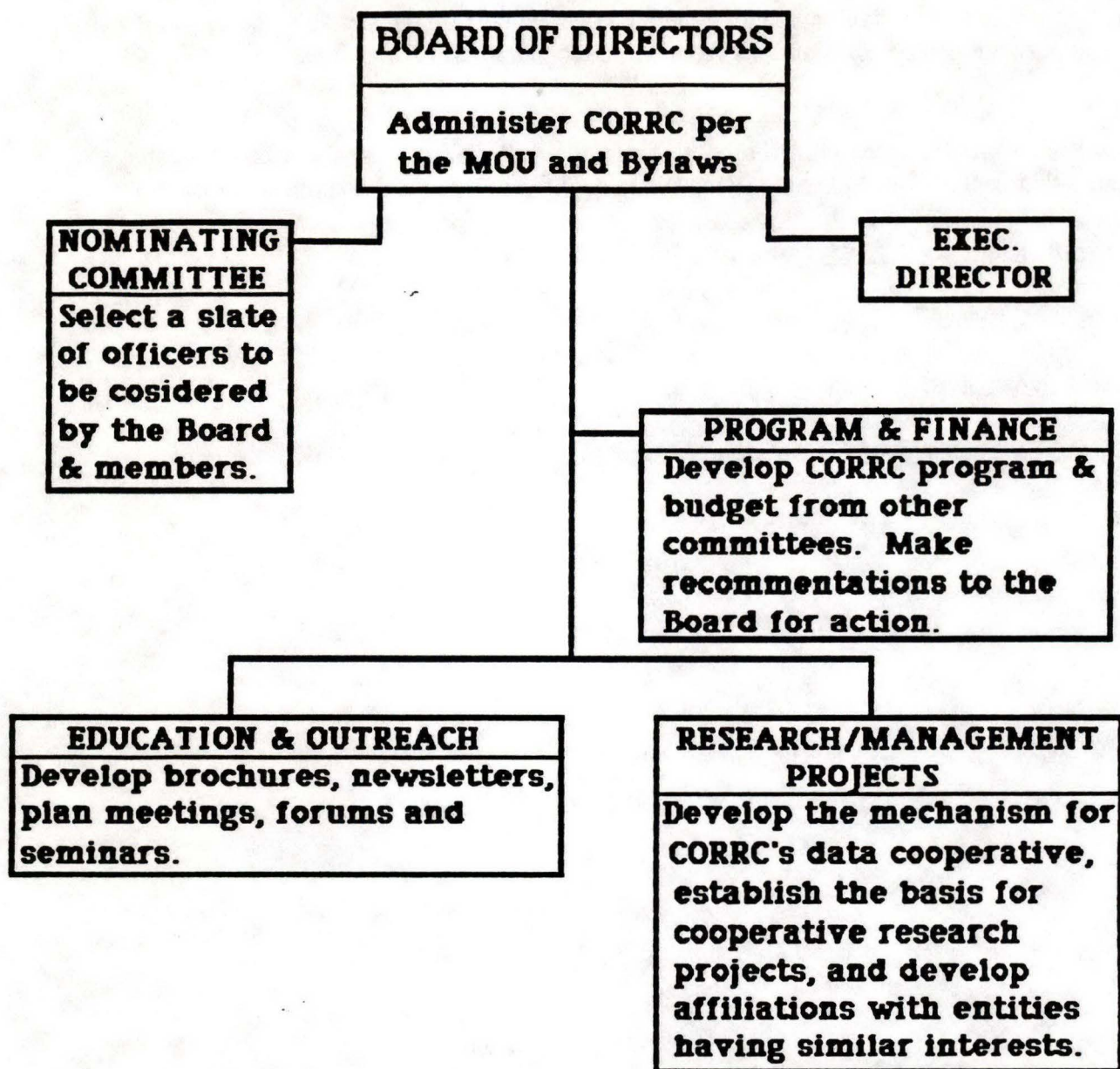


Fig. 2. CORRC ORGANIZATIONAL STRUCTURE, 1993.

The budget would be met from revenues generated by membership dues established by the Board of Directors or monetary contributions from MOU cooperators.

*** *In Kind Contributions*** - In the context of "in kind" contributions", it is reasonable to assume that each of the following items could qualify for one participating membership.

- a. Financial management, accounting and annual audits.
- b. Office space.
- c. Office support.
- d. Publications support - Printing and mailing.
- e. Transportation - a vehicle (?).